

Editor-in-Chief

of the scientific online journal *Actual Problems of Oil and Gas*



Leyla A. Abukova – director of OGRI RAS

- Doctor of Science in Geology and Mineralogy, Professor
- President of the Russian National Committee of the International Association of Hydrogeologists
- Member of the Expert Council on Fundamental and Applied Research of the Committee of the State Duma on education and Science
- Rosgidrogeo Board Member
- Head of the Department of Modeling of the Hydrocarbon Reserves of of Gubkin Russian State University of Oil and Gas
- In 2015–2015 – Member of the Expert Commission on Oil and Gas of the Higher Attestation Commission
- President of the Scientific Council and Member of the Dissertation Council of OGRI RAS
- The author and founder of *Oil and Gas Hydrogeology* website

Leyla A. Abukova is a well-known expert in hydrogeology and oil and gas geology. Her research activity is of special importance for the development of the fundamental basis for oil and gas geofluid dynamics. The linchpin of L.A. Abukova's research is the study of the relationship between natural regimes of hydrocarbon deposits and the energy potential of water pressure systems, the influence of geofluid dynamic heterogeneity on the location of oil and gas accumulation zones in sedimentary basins, including the bottoms of the sedimentary cover. Her research summarizes enormous evidence on the manifestations of superhydrostatic and subhydrostatic formation pressures in many oil and gas bearing basins of Russia, Uzbekistan, Canada, the USA, Hungary, Mexico, China, and Australia. This made possible to substantiate the block character of fluid dynamic fields at great depths, the presence of large oil and gas accumulation zones in non-structural (including mono- and synclinal) conditions within the poorly studied territories of Western and Eastern Siberia, the Far East, the Timan-Pechora region, Turkmenistan and Uzbekistan, to substantiate the expediency of disposing of liquid industrial (including radioactive) wastes into depressed water-bearing structures, primarily in Eastern Siberia. The methods introduced by L.A. Abukova to estimate the spatial and temporal relationships of energy potentials of water, oil and gas within individual oil and gas bearing basins and its parts serve as a basis for building 3D models of formation, conservation and destruction of hydrocarbon deposits.

The most significant results of her scientific activities include the development of the theory and methods of paleo-hydrogeological analysis of sedimentary oil and gas bearing basins, the role of hydrogeological factors in the formation of fields at the latest stages of geological history. The developed method of paleo-hydrochemical analysis based on lithofacial and paleoclimatic features of sedimentary basins is included in many university textbooks on oil and gas hydrogeology.

Another direction of L.A. Abukova's scientific analysis is the role of groundwater in microspaces of geological environment. A set of experimental studies was carried out to analyze the mechanisms of primary migration of hydrocarbons from thin-layered oil and gas clayey rocks in a coarse-grained medium through the strong and loosely bound pore water, the influence on the geochemical activity of the last vibro-acoustic and thermobaric effects. The received extensive experimental material has allowed to detail representations about mechanisms of conjugated oil and ore genesis, formation of industrially significant deposits of oil and gas in low-permeable deposits.

Long-term studies by L.A. Abukova are related to the influence of hydrogeological conditions on the development of gas and oil fields. She has investigated the influence of water-soluble gases on processes of watering of gas fields at pressure decrease below pressure of saturation in collectors of various types, including thin-layered, a role of carbon dioxide leaching of collectors under the influence of low-mineralized condensation waters, hydrogeological reasons of sanding of terrigenous collectors. Reliable methods have been developed to establish the genetic profile of associated waters in the process of oil and gas reservoirs development. For many regions of Russia, including the Taman and Kerch Peninsulas, the possibilities of extracting valuable components from the associated waters of oil and gas deposits and methane extraction from underground waters have been assessed. Two patents have been registered for the proposed engineering solutions. A methodology has been described to specify initial, current and pinched gas reserves at fields with long history of operation. An automated system for forecasting the nature and scale of salt formation when mixing natural and technical waters has been proposed.

L.A. Abukova has carried out a number of joint projects with production organizations under her supervision, developed regulatory guidelines for hydrochemical monitoring at a number of oil and gas field facilities.

L.A. Abukova has published personally and co-authored more than 140 scientific papers, including 3 monographs, one of which – Dictionary of Oil and Gas Hydrogeology in co-authorship with A.A. Kartsev – was published in 2015.

L.A. Abukova conducts extensive work on consolidation of specialists in the field of oil and gas hydrogeology, she managed international projects of the Russian Foundation for Basic Research with Ukraine and China. On her personal initiative and chaired by L.A. Abukova in 2005, 2010, 2015 three major conferences with international participation on fundamental issues of oil and gas hydrogeology were held, becoming the landmark events and largely determining the main directions of oil and gas hydrogeology.

Publications:

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