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THE LIFE PATH AND SCIENTIFIC PRIORITIES OF PROFESSOR TAMERLAN SAFRANOV

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Abstract. The life path and the range of scientific interests of Professor Tamerlane Safranov are described. The main results of the scientific research in the field of organic geochemistry, hydrogeochemistry, environmentology, optimization of nature management and environmental education are presented.

Key words: organic matter of sedimentary rocks, naphtids, groundwater, estimation of the environment, nature management, environmental education.

Tamerlane Safranov was born on August 10, 1942 in the village of Nogkau in the Alagir district of North Ossetia. His parents were descendants of the Ossetian noble families ("alders" – the mountain princes).

In 1966, T. Safranov graduated from the Faculty of Geology of the Tajik State University with distinction and received a qualification as an "engineer-geologist". From 1966 to 1981 he worked as a researcher at the Tajik Department of the All-Union Geological Petroleum Research Institute (TD AUGPRI, Dushanbe). In 1972 he defended his Ph.D. thesis and obtained a Ph.D. degree in geological and mineralogical sciences in specialty 04.00.02 – Geochemistry on the theme "Distribution and Composition of Organic Matter in the Mesozoic Sediments of the Tajik Depression" (Leningrad (St. Petersburg), the All-Union Oil Geological Prospecting Research Institute). During 1974-1981 he worked as an assistant professor of the Department of Hydrogeology and Engineering Geology of the Tajik State University (he received a title of an assistant professor of the Department of Hydrogeology and Engineering Geology in 1978). In the period from 1981 to 1990 he headed the Laboratory of Geochemistry and Hydrogeology at the Tajik Department of the All-Union Geological Petroleum Research Institute. From 1987 to 1988 he worked as an expert at Petrobangla Corporation (Dhaka, Bangladesh). From 1990 to 1992 he worked as an assistant professor of the Department of Physical Geography of the North Ossetian State University (Vladikavkaz).

Since 1992 T. Safranov has been a member of the Odessa Hydrometeorological Institute (since 2001 Odessa State Environmental University – OSENU). At first he held a position of an assistant professor of the Department of Ecology, since 1994 – the professor, and since 1995 he has been working as a Head of the Department of Applied Ecology (now the Department of Ecology and Environmental Protection). In 1994 he defended his thesis for obtaining a degree of Doctor of Geology and Mineralogy in the specialty 04.00.17 – exploration of oil and gas fields and 04.00.02 – geochemistry on the theme "Naftidogenesis in the basins

of the Central Asian orogenic zone" (Lomonosov Moscow State University). He was re-tested at the Institute of Geological Sciences of the National Academy of Sciences of Ukraine (Kiev, 1995). In 1996 he was awarded a title of a Professor of the Department of Ecology of Odessa Hydrometeorological Institute (Odessa State Environmental University).

Profeddor Safranov is the author (co-author) of more than 580 scientific works (monographs, articles, theses of reports, reports on the results of research works, etc.) in the field of organic geochemistry, hydrogeochemistry, environmentology, optimization of nature management and environmental education.

The main monographs published with the participation of T. Safranov are: "Hydrogeological Preconditions of O and Gas Content". Dushanbe: Donish, 1975; "Oil and Gas Content of the Paleogene Deposits of the Tajik Depression". Dushanbe: Donish, 1978; "Pressure of the Reservoir Fluids". Leningrad: Nadra, 1987; "Underground Water of Oil and Gas Deposits of the USSR". Moscow: Nadra, 1989; "Physico-chemical Characteristics and Individual Composition of Oil and Condensates of the Soviet Union". Moscow: Nadra, 1989 [1–5].

The geochemical features of organic matter of sedimentary rocks, coal, combustible shale, naphtids (hydrocarbons gases, condensates, petroleum, natural bitumen of various genetic lines) were characterized in the indicated monographs, articles, theses of reports, reports on the results of the research works in order to identify the patterns of naftidogenesis (all stages of the ontogenesis of the organic matter and its migration forms from the stages of sedimentogenesis-diagenesis to the formation of naphtidic aggregates) in the foothills and intermountain basins of Central Asia. In this case, special attention was paid to the identification of the sources of hydrocarbon generation at different stages of sedimentary rocks conversion, a quantitative assessment of the processes of liquid and gaseous hydrocarbons generation. The features of a composition of the dispersed and concentrated organic matter at all stages of the lithogenesis were shown. Based on the study of "biological markers", paleoecological conditions in the sedimentary basins have been reconstructed and the genetic roots of hydrocarbons in various sedimentary deposits have been mapped. It is noted that coal deposits can be the sources of not only gaseous, but also liquid hydrocarbons. Features of the processes of oil transformation were characterized both in aerobic and anaerobic (rigid thermodynamic) conditions. A number of works were devoted to oil typing and assessing their metal content. Extremely high concentrations of vanadium, nickel, and other metals are found in heavy oils and products of their conversion in aerobic conditions (maltha), as well as a significant presence of metal porphyrins. Surface and groundwater surveys were focused on the determination of hydrogeochemical criteria of oil and gas content, as well as on the assessment of water from the point of view of their suitability for medical, industrial, heat and other purposes. The research on the assessment of the negative impact of drilling on the environment, conducted in the 1970's before the large-scale studies on the assessment of technogenic activities on the environment began had a special place in the research.

In the late 1990's Prof. Safranov, together with the staff of the Department of General and Marine Geology at the I. I. Mechnikov Odessa National University, where he worked part-time, were conducting geological and geochemical studies that were related to the forecast of oil and gas content of the sediments of the north-western shelf of the Black Sea. The conclusions on the presence of predominantly clusters of gaseous hydrocarbons were made. In addition, an assessment of the possible negative impact of the works related to the exploration and exploitation of oil and gas deposits on the marine environment was made; it was noted that they could be the most powerful factor in the degradation of the marine ecosystem.

After defending his doctoral dissertation (1994) and being awarded an academic title of the professor of the Department of Ecology (1996), T. Safranov's research direction was reorientated to assess the quality of the environment, to optimize the nature management and to solve the problems of environmental education. He has published more than 400 works (monographs, articles, abstracts, textbooks, manuals, copyright certificates and patents, reports on the results of the research works) on this issue. The subject of these studies covered such a range of problems:

– assessment of the state of the environment and its constituents (atmospheric air, natural waters, soil cover, geological environment, biota);

– systematic analysis of the environmental quality of individual regions;

– ecological features of urbanized territories;

– an integral estimation of the natural-recreational potential of regions, territories and water areas (assessment of bioclimatic and hydromineral resources, possibilities of thalassotherapy, etc.);

– possible influence of the changes in a temperature regime on the recreational capacity and socio-economic conditions in the regions of Ukraine;

– assessment of the quality of natural waters for economic and drinking needs (assessment of contamination by heavy metals and other pollutants, assessment of the physiological full value of the mineral composition of drinking water, etc.);

– ways of water supply and sewage systems optimization;

– improvement of the management system and solid household waste management (classification, the approaches to the implementation of the "zero" waste concept, etc.);

– influence of the quality of the environment components on the state of health of the population;

– greening (ecologization) of higher education and the ways of improvement of professional environmental education.

During 2012–2018 Prof. Safranov prepared sections for the following collective monographs: "Actual Problems of the Estuaries of the North-Western Black Sea Region". Odessa: TES, 2012; "Medico-hydrogeochemical Factors of the Geological Environment of Ukraine". Kiev-Chernivtsi: Bukrek, 2015; "Water Security". Nikolaev: PMBSNU – Bristol: UWE, 2016; "State and Quality of the Natural Environment of the North-Western Black Sea Coast". Kharkiv: Publisher Panov A. M., 2017; "Classification of Solid Household Wastes as a Prerequisite for the Formation of Waste Management System". Dnipro: Publisher Bila K. O., 2018; "Professional success in the context of a sustainable development: education, economics and ecology". Cherkasy: Publisher Chabanenko Y. A., 2018 [6–8].

Professor T. Safranov is the author (co-author) and editor of textbooks and manuals, most of them have the stamp of the Ministry of Education and Science of Ukraine: "Environmental Bases of Nature Management". Lviv: "New World-2000", 2003; "Monitoring of the Environment". Kiev: KNT, 2007; "General ecology and Neoecology". Kharkiv: KhNU, 2010; "Monitoring of the Environment". Kiev, 2010; "Monitoring of the Environment". Kherson: Grin D. S., 2011; "Assessment of a Technogenic Influence on the Geological Environment". Odessa: Ecology, 2012; "Assessment of the Quality of Natural Waters". Odessa: Ecology, 2012; "Management and Waste Management". Odessa: TES, 2012; "Ecological and Economic Bases of Nature Management". Lviv: "New World-2000", 2013; "Technoecology". Kherson: Oldi Plus, 2014; "Management and Waste Management: Workshop". Odessa: TES, 2014; "System Analysis of the Environmental Quality". Odessa: Ecology, 2015; "Assessment of the Modern State and Management of Aquatic Ecosystems". Odessa: TES, 2018, etc. [9–18].

Numerous scientific articles, abstracts of reports are devoted to the problems of environmental quality assessment, optimization of nature management and environmental education. T. Safranov is also the author (co-author) of eight certificates of authorship and patents.

Professor Safranov was a chairman and a deputy chairman of the specialized scientific council for defending the dissertations at the OSENU. Under his leadership, eight candidate dissertations and one doctoral dissertation have been prepared.

For many years T. Safranov was a member of the Presidium of the Scientific and Methodological Commission (SMC) on Ecology (Ecology, Environmental Protection and Sustainable Nature Management) of the Ministry of Education and Science of Ukraine, and he was also a deputy chairman of this Commission. In addition, he was a member of the Expert Council on Mathematical and Natural Sciences of the State Tax Administration of Ukraine and he is an experienced expert of the Ministry of Education and Science of Ukraine on accreditation of higher educational institutions and educational programs. T. Safranov carried out a qualified expert assessment of many manuscripts of textbooks and educational manuals in the field of environmental studies, which came to the SMC for receiving the stamp of the Ministry of Education and Science of Ukraine. He was a member of the Tempus Project Consortium (544524-Tempus-1-2013-1-Pl-Tempus-Smhes) and jointly with Zakharchenko V., Stepanenko S. and other colleagues have developed modern "Qualifications Framework in the Field of Environmental Science in the Ukrainian Universities "(Odessa, 2017).

Professor Safranov is one of the developers of the Concept of the Environmental Education of Ukraine (2001), which was approved by the Board of the Ministry of Education and Science of Ukraine. The Concept of Ecological Education of Ukraine is an important regulatory document, which identifies strategic directions and tactical tasks for the development of environmental education for all segments of the population – from childhood to the old age – with the aim of forming ecological culture and consciousness of citizens, habits and fundamental environmental knowledge. This document provides the basis for the development and implementation of new programs of the environmental education and upbringing both for the children of preschool and school age and for students of vocational schools, technical schools, colleges and institutions of higher education, for heads of various institutions, specialists of various profiles and industries. The concept of ecological education determines the ways of greening (ecologization) of higher education in Ukraine.

Professor Safranov was a member of the working groups on the development of the Sectoral standards of higher ecological education of Ukraine in the areas of training "Ecology" ("Ecology, Environmental Protection and Sustainable Nature Management") and the specialty

"Ecology and Environmental Protection". He also directed the group working on the development of the Sectoral Standard of Higher Ecological Education of Ukraine in the specialty "Ecology and Environmental Protection" (for the educational-qualification level "Master"). T. Safranov took an active part in the development of the methodological support of the standards of higher ecological education ("Educational Programs of the Normative Disciplines of the Educational and Professional Training Program of a Bachelor: Educational Publication". Kharkiv, 2005 – co-author, co-editor; "Collection of Test Tasks for Checking the Residual Basic Knowledge of the Normative Disciplines of the Educational and Professional Program of Bachelors". Odessa: Ecology, 2011 – co-author; "Collection of the Programs of the Normative Educational Disciplines of Educational-professional Training Program of Bachelors in the Specialty "Ecology and Environmental Protection". Odessa, TES, 2013 – co-author; "Collection of Programs of Educational Disciplines of the Educational-professional Training Program of Masters in Specialties "Ecology, Environmental Protection and Sustainable Nature Management", in a branch of knowledge "Natural Sciences", Odessa: TES, 2014 – co-author, co-editor). He was a member of the Scientific-advisory and Editorial Board of the educational-scientific series "Library of the Ecologist".

Since 2016 Prof. T. Safranov has been the head of the Subcommittee on specialty 101 "Ecology" of the Scientific-methodical commission number 7 on Biology, Natural sciences and Mathematics of the Scientific-methodical Council of the Ministry of Education and Science of Ukraine (Order No.375, dated April 6, 2016). The members of the subcommittee were the first in Ukraine to develop the standards of higher education in specialty 101 "Ecology" for the first (Bachelor) and second (Master) higher education levels approved by the relevant orders of the Ministry of Education and Science of Ukraine (Order No. 1076 and 1066, dated 04.10.2016). In addition, members of this subcommittee prepared a draft standard on specialty 101 "Ecology" for the third level of higher education – Ph.D.

T. Safranov is an initiator and organizer of the All-Ukrainian scientific-methodical conference "Management of the training quality of specialists", which is conducted on the basis of OSENU. He has devoted more than 50 publications to the scientific and methodological aspects of training the environmentalists. He is a developer of methodological support (programs, test assignments, etc.) as well as an organizer of the All-Ukrainian Student Ecological Olympiads held on the basis of OSENU. T. Safranov is an initiator and organizer of 20 All-Ukrainian and International Young Scientists Scientific Conferences devoted to the issues of regional ecology. Under his guidance, 20 winners and many prizewinners of the All-Ukrainian and International Student Ecological Olympiads and competitions of student scientific works in ecology have been prepared.

Prof. T. Safranov is a member of the editorial board of several scientific journals, and also a deputy editor-in-chief of the "Ukrainian Hydrometeorological Journal" (he is responsible for the section "Constructive Geography and Rational Use of Natural Resources").

Safranov T. has passed scientific internships in the USA, Greece, Turkey, Bulgaria, Romania, Slovakia and Poland. In 1996 he was elected to be an academician of the International Academy of Ecology and Safety of Life. He is a member of the Balkan Ecological Association and the International Association of the Universities Ecologists.

Prof. T. Safranov was awarded with the Certificate of Honor of the Cabinet of Ministers of Ukraine (2002), breastplates of "Peter the Grave" (2007) and "Excellence in Education of Ukraine" (2009), "Honorary Diploma of the Council of Rectors of the Odessa Region for the contribution to the development of the education" (2015), "Honorary Diploma of the Council of Rectors of the Odessa Region for the contribution to the development of science"(2017), as well as many other diplomas for successful scientific and pedagogical activity. According to the results of the teacher rating for the seven years Prof. T. Safranov took the first place four times.

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