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To 90th-years Jubilee

Liya K. Yakhontova

an author of new concept of supergene processes at ore deposits

Liya Konstantinovna Yakhontova, Doctor of Geological-Mineralogical Sciences (1973), Professor (1992), Leading Researcher of the Mineralogy Department, Geological Faculty, Lomonosov Moscow State University, was born on the 24th of July 1925 in the village of Roslyatino (Vologda Oblast, Russia). In 1949, she graduated from the Geological Faculty of the Lomonosov Moscow State University and then worked there all her life.

Liya Yakhontova was an Honorary Member of the Russian Mineralogical Society and a member of its coordination council on ecology. Her scientific interests were related to supergene mineralogy, its mineral typomorphism and genesis of weathering crusts and oxide ores of diverse mineral deposits.

Liya Yakhontova was awarded with five diplomas for discovery of new minerals. She published more than 220 works, including 4 monographs. A mineral of yakhontovite, a copper-bearing smectite of supergene origin, was named after her.

Liya Konstantinovna Yakhontova (1925–2007)

The most important monographs among the numerous works of Yakhontova on different mineralogical subjects were *'A Supergene Zone of Ore Deposits*' (1978, co-authored with A.P. Grudov)[1], *'A Supergene Zone of Ore Deposits as a Bio-Inert System'* (1983, co-authored with L.G. Nesterovich)[2] and a textbook *'Principles of Supergene Mineralogy'* (2000, co-authored with V.P. Zvereva)[3]. These works elaborated the fundamental problems related to the role of micro-organisms in oxidation of ores, to mechanisms of bio-inert interaction, to estimates of the mineral stability in ecosystems and problems of mineralogical support for biogeotechnologies.

As a result of experimental and theoretical studies during many years, Yakhontova reworked and refined knowledge on supergene systems with implementation of corrosion model of their functioning and important role of bio-inert interaction. She discovered the quantitative cause-effect links in a series of factors: regional geomorphology – dynamics of ground water – chemistry of water and its pH – zonation and types of supergene mineralization. She managed for the first time to employ the crystallochemical characteristics of minerals to analyze the intensity of supergene processes.

The conceptual principles of the effective stability of the mineralogical substrate in bio-inert interaction, developed by Yakhontova on the basis of crystallostructural characteristics of minerals, formed a new scientific branch related to mineralogical support of effective biogeotechnologies.

The author is honoured to meet Liya Konstantinovna many times during several decades in different situations and at different places, most often upon an invitation of the Ukrainian Mineralogical Society in Ukraine. I have strong memories about her, a scientist with widest knowledge, an outstanding teacher, a useful opponent, a beautiful Friend and Human Being.

[1] on Russian – *"Zona Gipergenezisa Rudnykh Mestorozhdenii"* («Зона гипергенеза рудных месторождений»)

[2] on Russian – *"Zona Gipergenezisa Rudnykh Mestorozhdenii kak Biokosnaya Sistema"* («Зона гипергенеза рудных месторождений как биокосная система»)

[3] on Russian – *"Osnovy Mineralogii Gipergeneza"* («Основы минералогии гипергенеза»)

To 250th-years Jubilee

Vasiliy M. Severgin

a Head of the Russian Mineralogical School in the end of the 18th to early 19th century

Vasiliy Mikhailovich Severgin (1765–1826)

Vasiliy Mikhailovich Severgin, Russian mineralogist, chemist and geologist, was born in St.-Petersburg in the family of a musician. At 11, he entered an Academic College, from where he was transferred to the Academic University in 1784. He then continued his study of chemistry and mining during three years in the Gottingen University followed by an adjunct position in the St.-Petersburg Academy of Sciences. In 1793, Severgin became Academician (Professor), taught mineralogy and chemistry at the Medical-Surgery Academy and fire assaying in the Mining Institute. He was Academician of the Swedish Academy of Sciences, a member of the 18 Russian and foreign scientific societies, a honorary member of the Moscow University and Mineralogical Society since its foundation in St.-Petersburg (1817), a founder and an editor of the *'Techological Journal'* (1804). Severgin is an author of more than 250 scientific works, including a fundamental mineralogical vocabulary (*'A Detailed Mineralogical Vocabulary, containing detailed explanation of all mineralogical words and names and all newest discoveries of this science'*, 1807, 1814 pp.)[1] and books (*'First Principles of Mineralogy or Natural History of Minable Bodies'* (1798)[2]; *'An Experience of Mineralogical Description of the Russian State'* (1809)[3]; *'An Outline of Technology of Mineral Kingdom'* (1821)[4]. He translated into Russian a *'Chemical Vocabulary'* (1810–1813, 2128 pp.) and created first Russian chemical nomenclature.

Severgin emphasized importance of precise geometrical study of *'minerals of right type'*, i.e., crystals, and most detailed description of their multiple properties, whose number might have reached 23. Like Mikhail V. Lomonosov and René Just Haüy, he followed an atomistic theory of matter. Severgin emphasized a structural-genetic nature of crystallography, not considering it as a simple descriptive science: *'Crystallography deals with systematic description, showing all their inter-relationships'*.

During all his life, Severgin promoted an idea of the usefulness of mineralogy to the development of the economics in the state. He was first to propose *'economic mineralogy'* as an independent branch, which he developed in his papers on the pages of the *Technological Journal*. To this aim, he also devoted his work *'An Outline of Technology of the Mineral Kingdom'*. *'First Principles of Mineralogy or Natural History of Minable Bodies'*, a 1798 book by Severgin, became a first large work on systematics of minerals in Russia.

In 1803, Severgin published in St.-Petersburg his work '*Notes on Travels in the Western Provinces of the Russian State, or mineralogical, economic and other notes, made during the journey in 1802*', in which the author paid special attention to mineralogy of Podolia (Ukraine). He also published this data in the monograph *'An Experience of Mineralogical Description of the Russian State'*, which initiated topomineralogical studies in Russia.

Severgin was a decisive supporter of the chemical studies in mineralogy and developed a first Russian chemical classification of minerals. Long before Johan-August-Friedrich Breithaupt, he paid attention to paragenesis of minerals, using a Russian word of *"coexistence"* («смежность»). He worked productively in creation of the Russian scientific terminalogy in mineralogy and chemistry.

He was also productive as an academic manager in the Russian Academy of Sciences, Free Economic Society and Ministry of People's Education. Severgin was one of the founders of the St.-Petersburg Mineralogical Society (1817), at present Russian Mineralogical Society, the world's oldest mineralogical society today.

A mineral **severginite** was named after Severgin in 1951. It is a highly manganese member of the axinite group, which was later understood to be identical to the earlier discovered tinzenite and unfortunately 'severginite' disappeared from the nomenclature of mineral species.

Recently, this gap was filled. To the 250th-years jubilee of Vasiliy Mikhailovich Severgin **vasilseverginite** $Cu_9O_4(AsO_4)_2(SO_4)_2$, a new mineral named after him, was discovered. This mineral has very unusual crystalline structure, it discovered in the fumarolic exhalations of the Tolbachik Volcano in Kamchatka.

[1] on Russian *"Podrobnyi Slovar Mineralogicheskii, Soderzhashchii v Sebe Podrobnoe Iz'yasnenie Vsekh v Mineraloguu Upotrebitel'nykh Slov i Nazvanii, Takzhe Vse v Nauke Sei Ichinennye Noveishie Otkrytiya"* («Подробный словарь минералогический, содержащий в себе подробное изъяснение всех в минералогии употребительных слов и названий, также все в науке сей учиненные новейшие открытия»)

[2] on Russian *"Pervye Osnovaniya Mineralogii, ili Estestvennou Istorii Iskopaemykh Tel"* («Первые основания минералогии, или естественной истории ископаемых тел»)

[3] on Russian *"Opyt Mineralogicheskolo Zemleopisaniya Rossiiskogo Gosudarstva"* («Опыт минералогического землеописания Российского государства»)

[4] on Russian *"Nachertaniya Tekhnologii Mineral'nogo Tsarstva"* («Начертание технологии минерального царства»)