DOUBLE INTERPRETATION OF ROCK NAMES IN THE WESTERN GEOLOGICAL TERMINOLOGY COMPARED TO THE FORMER SOVIET AND CURRENT RUSSIAN-UKRAINIAN PRACTICE; TERMINOLOGICAL SUGGESTIONS

KŐZETNEVEK KETTŐS ÉRTELMEZÉSE A NYUGATI ÉS AZ EGYKORI SZOVJET, MAI OROSZ-UKRÁN GEOLÓGIAI SZAKIRODALOMBAN, TERMINOLÓGIAI JAVASLATOK

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Abstract

This paper summarises siliceous rock terminology practice currently in use for the Transcarpathian Regions of Ukraine (=Kárpátalja). It is published in full text bilingual form for AM.

Kivonat

Ez a munka a kovakőzetek jelenlegi nevezéktani gyakorlatát foglalja össze Kárpátalja tekintetében. Az Archeometriai Műhely két nyelvi változatban (magyar és angol) közli a tanulmányt.

KEYWORDS: TERMINOLOGY, SLICEOUS ROCKS, TRANSCARPATHIAN UKRAINE

KULCSSZAVAK: TERMINOLÓGIA, KOVAKŐZETEK, KÁRPÁTALJA

Introduction

The aim of this paper is to draw attention to the sometimes ambiguous use of mineralogical / petrographical terms for siliceous raw materials currently in use mainly for the Transcarpathian Regions of Ukraine (=Kárpátalja). As it is basically intended to clear and explain existing terminology, the English version preserved the original (Ukrainian, Russian and Hungarian) names as well. Apart from this, elements of Hungarian terminology are also listed as comparative examples ((Balogh 1991, Wallacher 1992).

Jasper

Jasper (ru: „яшма"; ua: „яшма"; hu: jáspis) – sedimentary siliceous rock composed basically of cryptocrystalline chalcedony. It is often of variegated colour, sometimes striped. Radiolaria may occur in the jasper often preserving their original form. This rock is frequently occurring in the Palaeozoic period, less frequent in the Mesozoic. (Криштофорович 1955).

According to another interpretation, jasper is composed of microcrystalline chalcedony, its colour is black, red, sometimes greenish, with yellow or black stripes, patches. It is a hard and compact rock with conchoidal fracture. Under the microscope chalcedony and a large quantity of dispersed Fe-oxide components are observable as well as clay minerals and remains of Radiolaria. The Radiolaria are often observable in stripes within the rock. Other organic remains are very rare. In the stripes with Radiolaria, sometimes we can observe zeolite crystals. There are variants of jasper occurring where the Radiolarian remains are completely missing. According to the author, jasper is often erroneously described as metamorphic. (Швецов 1958)

Jasper in Hvorova I. V. (1983) is described as a mainly red rock with conchoidal fracture. Iron is present in the jasper mainly in the form of hematite and goethite, the SiO_2 content can reach 95-97 %. The author distinguished jasper with Radiolaria and sponge spicules, respectively further on, in footnotes (p. 170.) she made a remark on the existence of metamorphosed jasper formed in great depth already loosing its sedimentary character and mentioned the existence of non-sedimentary jasper as well.

Wallacher L. (1992) called the siliceous rocks coloured red by iron jaspilite (hu: jáspilit). In the Slavic language technical literature, jaspilite is a rock with quartz-hematite or quartz-magnetite composition, practically a siliceous iron ore. (Криштофорович 1955)

In a geological dictionary published in 1973, the following comments are made on the various formation of jasper: jasper is defined here as a sedimentary siliceous rock with or without Radiolaria. Variants with Radiolarian remains are

considered epigenetic radiolarite (= slightly metamorphosed after diagenesis). Variants without Radiolaria are considered as of various origin, like volcanic sedimentary or chemical / biochemical origin. (Геологический словарь 1973)

Hornstone

Hornstone (ru: „роговик", „роговиковая порода"; ua: „роговик" or „роговикова порода", hu: szarukő) According to the Hungarian-Russian geological and geographical dictionary published in 1960 (Geiger 1960) the Russian equivalent of „szarukő" (=hornstone) is „роговик" or „роговиковая порода". The expression „szaruszirt" (=hornfels) is also expressed by the terms „роговик" or „роговиковая порода".

Hornstone (=hornfels) – contact metamorphic rock. It is of compact, grainy structure. "horny" structure. It is often mottled and has a conchoidal fracture. Its mineral composition is the following: quartz, mica, andalusite, sillimanite or cordierite, less frequently, amphibole or pyroxene etc. *(*Криштофорович *1955)*

Hornstone is a micro- or cryptocrystallyne contact metamorphic rock. Its colour is reddish brown or grey. It is composed of quartz, mica and garnet etc. (Білецький 2004).

Svecov M. Sz. (1958) has also mentioned hornstone in the description of siliceous rocks, only to note that the term is incorrect (Швецов 1958).

In his work on the petrographical classification of silex and siliceous rocks, Wallacher L. (1992) expressed his opinion that calling siliceous segregates "hornstone" is misleading and causes only trouble.

Geisirite

Geisirite (ru: „гейзерит"; ua: „гейзерит"; hu: gejzirit) – white or light coloured rock with large quantities of opal, formed from the precipitation of siliceous solutions in geisires and other hot water springs. Its synonyme is siliceous/silicified tuff. (Криштофорович 1955)

Geisirite is a tuff-like porose rock composed mainly of opal, deposited by hot underground waters striving towards the surface. In their precipitation, changes in temperature and pressure have a great role as well as expiration and the life activity of water plants. (Швецов 1958)

Geisirite is a sedimentary rock formed by the precipitation of siliceous solutions from geisires and other hot water springs. In another meaning it is a mineral, a white or grey opal the formation of which is the same as that of the rock. It is relatively rare, and synonymous with siliceous tuff. (Білецький 2004)

In the work of Hvorova I. V. (1983), geisirite is mentioned as a sedimentary siliceous rock formed around hot water springs having a layered structure due to gradual precipitation, formed around hot water springs. She does not identify them with siliceous tuffs. (Хворова 1983)

Wallacher L. (1992) identified geisirite as the same rock as hydroquartzite, explaining its formation by blocks of siliceous matter precipitated from hot springs with high silica water.

Lydite

Lydite (ru: „лидит"; ua: „лідіт"; hu: lidit) is named after the ancient kingdom of Lydia in Asia Minor. It was known as the touchstone of goldsmiths. It is a black, compact siliceous rock, composed mainly of chalcedony with some clay minerals. It has chonchoidal fracture and contains only Radiolaria as microfossils. Chemically, it is composed of silica (SiO_2) in 92-93 %, coloured black by bitumen (organic materials). According to some assumptions, certain varieties of lydite are fresh-water analogies of ftanites (ftanites are typically of marine origin). Its structure is mixed with apparent organic relict frame as well as the cryptocrystalline and micro-grained structure. (Геологический словарь 1973)

In the work of Wallacher L. (1992), lydite is described as a dark grey, black siliceous rock with schistose structure and abiomorphic structure, i.e., silexite.. Hungarian technical literature mentioned also other microfossils of siliceous skeletal elements as possible constituents for lydite (Balogh 1991 p. 39.)

Ftanite

Ftanite (ru: „фтанит"; ua: „фтаніт"; hu: ftanit) dark, sometimes black, hard rock with chonchoidal fracture. Its lustre can be shiny or dull. The texture is homogeneous, sometimes a slight layering can be observed in it due to the uneven distribution of mineral components and rock-forming organic components. The rock has a microcrystalline texture comprising mainly chalcedony, therefore it is also called chalcedonite. In some ftanites the organic remains are missing or they are very rare while in other cases they are present in rock-forming quantities. Accordingly, we can separate ftanite with radiolaria and ftanite with sponge spicules. The SiO_2 content is variable, it can reach 95 % as well. Another frequent constituent is clay, sometimes carbonates and piroclastic material. The organic carbon content of ftanites is high; additionally, pyrite can be present. Phosphatisation is often characteristic. Among the trace elements, it is relatively rich in V, Mo, Cu and Au. Ftanites get easily patinated.

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Ftanitoide rocks – resembling superficially to ftanites, but they are more dark with bluish, azure or green tint. The base material is more crystalline and contains Radiolaria and sponge spicules. Their chemical composition is similar to ftanite but with a lower carbon and phosphorous content. (Хворова 1983)

According to Wallacher 1992, ftanite is an abiomorphic, generally dark grey siliceous rock, a synonyme for „flint", i.e., silex.

Kiss J. (1998) considered lydite and ftanite as synonyme of radiolarites.

Other problematic cases in terminology - Continental / Terrestric siliceous rocks of postvolcanic origin

Metasomatites (~silicified volcanites)

Rocks coming through a metasomatic transformation can be specially varied. Their selected representatives were utilised by the prehistoric tool-makers as well. On the basis of chipped stone artefacts collected on the Palaeolithic settlements of the Beregszász Hills we can observe that several versions of local metasomatic rock were used. Petrographical thin section studies indicate the following:

- among the macroscopically very similar metasomatites that look on macroscopic grounds mainly as (limno)opalites several rock types can be separated, taking into consideration to original rock prior to the transformation;

- analysing the thin sections, three rock groups could be separated: silicified tuff (**Fig. 1.**), silicified tufite (**Fig. 2.**) and opalised rhyolite(**Fig. 3.**);

- due to recent petrographic analyses by B. Rácz the rocks enumerated in the second paragraph cannot be called hydroquartzite, geisirite or limnic opalite/quartzite/chalcedonite because the conditions of their formation does not agree with that of the latter.

Suggestion: we have to re-investigate rock samples named hydroquartzite, geisirite and other "problematic" names. In the case of silicified volcanites, one thin section can be enough to identify the original rock prior to silicification. It is possible, that part of the hydroquartzites / geisirites / limnic quartzites are actually metasomatically transformed (silicified, opalised) volcanic rocks.

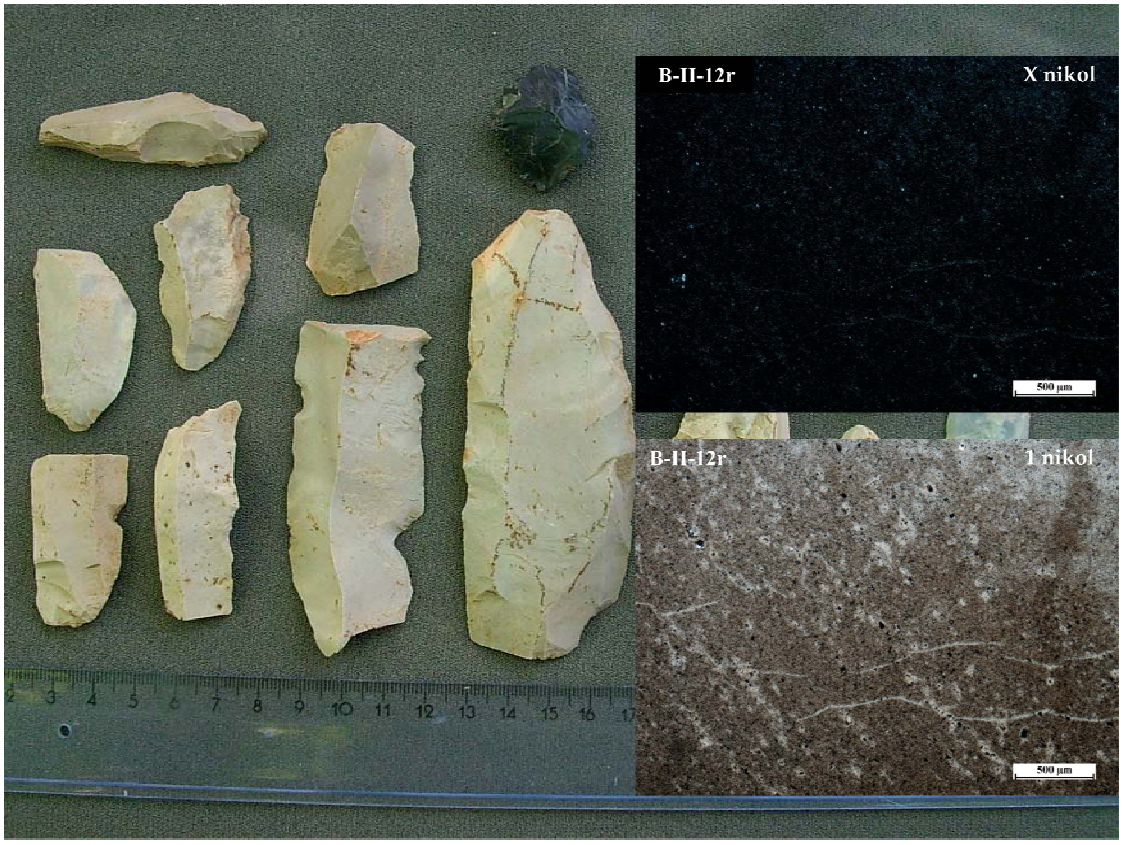

Fig. 1.: Metasomatic rhyolite tuff from the choice of Palaeolithic raw materials on the Western part of the Beregovo (Beregszász) Hills

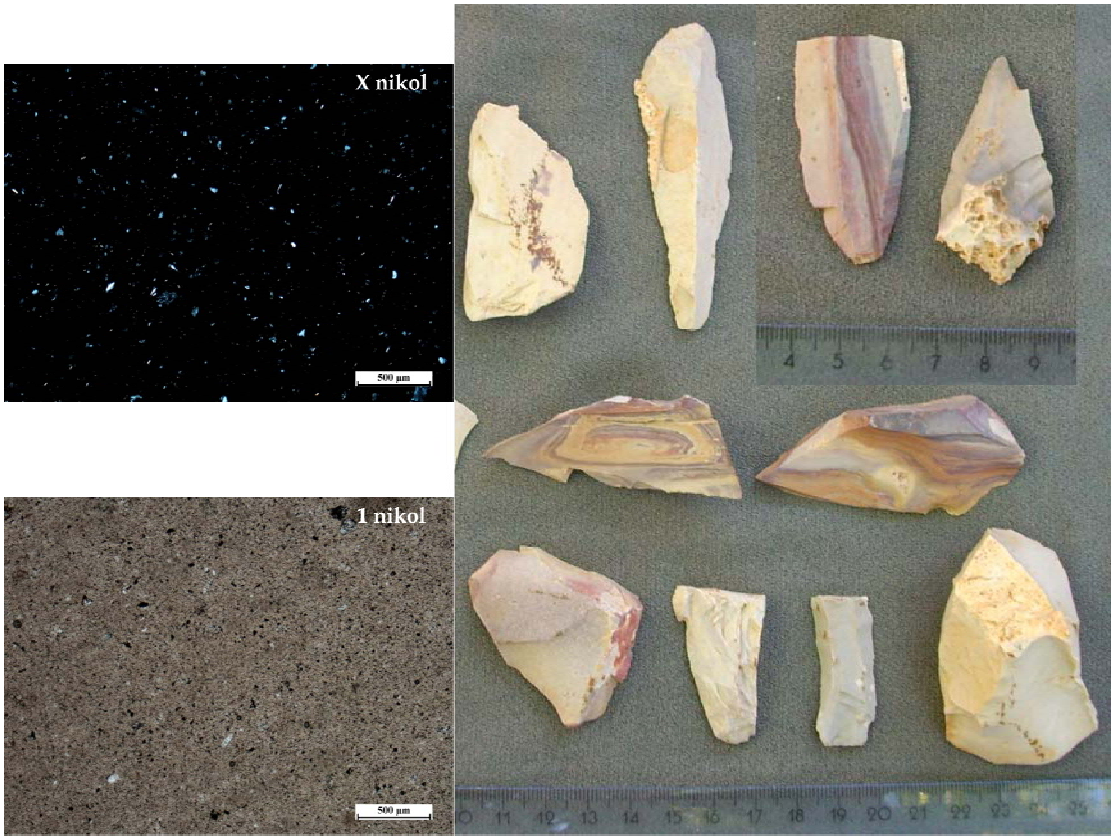

Fig. 2.: Metasomatic tuffite from the choice of Palaeolithic raw materials at the central part of the Beregovo (Beregszász) Hills

Fig. 3.: Metasomatic rhyolite from the choice of Palaeolithic raw materials on the Eastern part of the Beregovo (Beregszász) Hills

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Silicites

Due to the lack of proper descriptions the content of the following rock names are not clear or questionable: limnoquartzite, limnochalcedonite, limnoopalite. In the former Sowiet and the recent Russian-Ukrain technical literature these terms do not exist. According to Wallacher L. (1992), limnoopalites are formed in terrestrial environment precipitated from the water of hydroterms saturated with silica that turn (crystallise) into limnochalcedonite, limnoquartzite by the advance of time.

Suggestion: by petrographical thin section the rock substance (matrix) of the siliceous rocks with limnic origin can be easily observed, comprising dominantly opal, quartz or chalcedony (see Szekszárdi et al. 2010). The siliceous rock limnic should be named after the dominant mineral component. In the case the matrix is basically composed of isotrope opal, the name of the rock should be limnoopalite and, correspondingly, the other names should be made accordingly.

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HU ISSN 1786-271X; urn: nbn: hu-4106

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