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GEOCHEMICAL STUDY ON MAREKANITIC PERLITE OF TOKAJ-LEBUJ – A HISTORICAL APPROACH

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The marekanitic perlite outcrop of Tokaj-Lebuj is well-known as a stop of geological field trips. Besides its petrographical value, it is important from a science historical point of view, because its perlite and rhyolite varieties were described by the pioneers of the geological knowledge of the mountains. Johann Ehrenreich von Fichtel (1732–1795) was the first who reported this perlite containing obsidian nuclei, which he called (together with other perlites, rhyolites and rhyolite tuffs of the Tokaj Mountains) as volcanic zeolite. A few years later, in 1793, Robert Townson (1762–1827) collected several samples here, made fire and acid tests, and revised Fichtel's description. He asked Martin Heinrich Klaproth, the famous German chemist, to analyse the "pearly matrix", and published the result. According to our recent knowledge this is the first published chemical analysis of the rock (TOWNSON, 1797). In 1794, the Norwegian Jens Esmark (1763–1839) studied this outcrop. He called this rock as "perlstein" (German version of perlite).

It is well known that József Szabó (1822–1894), the most excellent Hungarian geologist in the 19th century, devised his theory on perlite genesis (i.e. hydratation of obsidian) on the basis of petrographic and chemical analyses of samples from the Tokaj Mountains (SZABÓ, 1866). His samples collected from Tokaj-Lebuj were analysed by BERNÁTH (1866). This remarkable formation has been petrographically studied by several researchers since Szabó's work, however, a systematic mineralogical-geochemical study has not been performed. It would be useful to analyse obsidian, perlite and rhyolite samples of this classic outcrop using modern analytical methods in a correlative way. Mineral and glass phases were analysed by polarised and scanning electron microscopy; geochemical analyses were performed by using scanning electron microprobe (SEM-EDAX), particle induced gamma-ray emission (PIGE) and laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). Water bound conditions of glass structures were investigated by thermal analysis (DTA, DTG, TG) and infrared spectroscopy (IR).

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