PŮVODNÍ PRÁCE/ORIGINAL PAPER

Zeolitová mineralizácia v permských bazaltoch hronika (Kozie chrbty, východné Slovensko)

Zeolite mineralization in the Permian basalts of the Hronicum Unit (Kozie Chrbty Mts., Eastern Slovakia)

Štefan Ferenc[1)]*, Adrián Biroň[2)], Jarmila Luptáková[2)] a Tomáš Mikuš[2)]

*[1)]Katedra geografie a geológie, Fakulta prírodných vied, Univerzita Mateja Bela, Tajovského 40, 974 01 Banská Bystrica, Slovenská republika; *e-mail: stefan.ferenc@umb.sk*
[2)]Ústav vied o Zemi, Slovenská akadémia vied, Ďumbierska 1, 974 11 Banská Bystrica, Slovenská republika

Ferenc Š., Biroň A., Luptáková J., Mikuš T. (2016) Zeolitová mineralizácia v permských bazaltoch hronika (Kozie chrbty, východné Slovensko). *Bull. mineral.-petrolog. Odd. Nár. Muz. (Praha) 24, 2, 256-268. ISSN 1211-0329.*

Abstract

Laumontite and heulandite-Ca were found in the cracks and cavities of Permian basalt (Malužiná Formation, Ipoltica Group of the Hronicum Unit), in the eastern part of the Kozie Chrbty Mts., at Spišská Teplica - Štefánikova and Lučivná - Lopušná Dolina localities. Laumontite has a relatively monotonous chemical composition, only K content reaches up to 0.75 *apfu*. Average crystallochemical formula of laumontite (both occurrences) is $(K_{0.41}Na_{0.06}Ca_{3.61})_{\Sigma 4.08}[Si_{16.03}Al_{7.54}]_{\Sigma 23.56}O_{48}\cdot 18H_2O$, Si/Al ratio 2.13. Main diffraction maxima d(I) of laumontite are 9.461(100), 6.844(44), 4.157(48), 3.508(33), 3.272(22), unit cell parameters: a = 14.738(1) Å, b = 13.087(1) Å, c = 7.554(1) Å, β = 111.84°, V = 1352.3 Å^3. Ca is dominant component in heulandite-Ca from the Štefánikova occurrence (2.18 - 2.69 *apfu*), from other admixtures, significantly increased is K content (1.30 - 2.35 *apfu*). Less important are Ba (0.05 - 0.7 *apfu*) and Sr (0.23 - 0.60 *apfu*), Na content reached up to 0.26 *apfu*. Average chemical composition of studied heulandite-Ca corresponds to formula $(K_{1.79}Na_{0.16}Ca_{2.39}Ba_{0.38}Sr_{0.39}Fe_{0.13})_{\Sigma 5.24}[Si_{26.82}Al_{8.94}]_{\Sigma 35.76}O_{72}\cdot 24H_2O$, Si/Al ratio 3.00. Its main diffraction maxima d(I) are 8.954(100), 4.650(17), 3.976(18), 3.897(18), 2.973(37), unit cell parameters: a = 17.786(1) Å, b = 17.930(1) Å, c = 7.4338(1) Å, β = 115.93°, V = 2131.9 Å^3. Zeolites probably originated during the Alpine orogeny, at the reduced p-T conditions after a peak of the prehnite-pumpellyite facies of basalt metamorphosis. The minimum estimated conditions of their origin are T ~ 210 °C and p 2.1 - 2.4 kbar, corresponding to the burial depth of Hronicum basalts around 7 km, in the time of zeolites formation.

Key words: *zeolite, laumontite, heulandite-Ca, basalts, Permian, zeolite facies metamorphism, Hronicum Unit, Slovak Republic*

Obdrženo: 30. 9. 2016; přijato 6. 12. 2016