GREEN CLAY MICAS IN MAGMATIC ENVIRONMENTS: PRELIMINARY RESULTS IN NORTH HUNGARY

FEHÉR, B.

Department of Mineralogy, Herman Ottó Museum [Ásványtár, Herman Ottó Múzeum], Kossuth u. 13., Miskolc, 3525, Hungary
E-mail: feherbela@axelero.hu

Green clay micas (i.e. glauconite and the celadonite family) occur sporadically in volcanic rocks of the Mátra and Tokaj Mountains, North Hungary. These minerals are associated mainly with Tertiary andesites and rhyolites in the Recsk Andesite (Eocene, Priabonian stage), Hasznos Andesite (Miocene, Karpatian stage), Mátra Andesite (Miocene, Badenian stage) and Tokaj Volcanite (Miocene, Badenian to Pannonian) Formations. Kubovics (1963; 1964a; 1964b) was the first to describe green clay mica as glauconite from Miocene andesite of the Ágasvár Hill, Mátra Mountains, later it was redefined as celadonite (Kubovics, 1966).

In magmatic environments green clay micas occur in three forms: 1) cavity fillings of volcanic rocks; 2) films covering fissures of volcanic rocks and 3) pigment materials in chalcedony or opal. The three forms are different from one another in separability and the quantity of separable material (Table 1). Separation procedures of magmatic green micas are not as difficult as described in the case of sedimentary glauconites by Fekete et al. (2003). Nest-like clay micas were separated from the host rock by crushing, after which the mineral could be readily hand-picked from the debris. From thin films the mineral can be picked using a sharp needle (cf. Buckley et al., 1978). It is impossible to separate the pigment green clay micas from the host materials (usually opal and chalcedony) so we have to study them together.

Table 1: Forms of magmatic green clay micas and their separability

Form	Separability	Quantity of separable material
nest	high	large
film	high	small
pigment	low	large (but contamined)

In the Mátra and Tokaj Mountains opals and chalcedonies are frequently coloured to green. Green colour is caused by different clay minerals, commonly micas and smectites (nontronite) as well as X-ray amorphous phases. Green colour of opals and chalcedonies proved to be caused by green clay micas at Bábakő, Tolcsva; Veresvíz mine and Kánya Hill, Telkibánya; Bőr Hill, Hollóháza; Cink Hill, Erdőhorváti; Mulató Hill, Erdőbénye; Recsk; Köves Hill, Gyöngyöstarján localities. Weak reflections and frequent absence of the diagnostic 060 peak from the XRD pattern make the identification of the green clay micas mixed with silica difficult. Causes of weak reflections are probably the low degree of crystallinity of micas and/or their very small crystallite size. Therefore some of the X-ray amorphous green phases may be micas with very low crystallinity and/or very small crystallite size. Otherwise silica is very useful in genetic aspect, because it preserved the transformation (oxidation) fronts between green clay mica and iron-oxide (-hydroxide) minerals (hematite, goethite).

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