Metamorphic conditions determined in the Neotethyan Meliata Superunit accretionary wedge mélange (Inner Western Carpathians)

O. NEMEC[1]* M. PUTIŠ[1]

[1]Faculty of Natural Sciences, Comenius University, 841 05 Bratislava, Slovakia (*correspondence: ondrej.nemec@uniba.sk)

Neothehyan Meliata Superunit of the Inner Western Carpathians (IWC) is composed of Middle to Upper Triassic oceanic crust ophiolite fragments and continental margin Permian to Triassic siliciclastic and carbonatic sediments included into Jurassic flysch within Late Jurassic-Early Cretaceous accretionary wedge mélange [1 and references therein]. The Meliata Basin closure was followed by subduction of the oceanic and continental margin crust and an accretionary wedge formation. This study is focused on the determination of metamorphic P–T conditions of the Meliata Superunit using a combination of thermodynamic modeling and geothermobarometry. Former results on the metamorphism P–T conditions were reported in [2, 3].

The Meliatic basic rocks underwent greenschist to blueschist facies metamorphic conditions. Grt-Phg blueschist layers in the Middle to Upper Triassic carbonates yield peak metamorphic conditions at 470 – 510 ºC and 14.5 – 17 kbar based on the Perple_X pseudosection modeling [4]. Albian conglomerate pebbles of inferred Meliatic origin show peak metamorphic conditions at 440 – 500 ºC and 12.8 – 15.5 kbar in the IWC (Fatric ?) Klappe Unit or 450 ºC and 12 kbar in the Fatric Unit (Jasenov loc.) based on the combination of Perple_X modeling [4] and Ms-Pg thermometry and Si-in-Phg barometry, respectively [5, 6]. Amphibolite facies (occurrence of Prg-bearing amphibolites) was achieved at the base of the ophiolite suite overthrusting subducted continental margin fragments. Chlorite thermometry [7], applied in the contact of the flysch and radiolarite layer, showed temperatures <300 ºC (273 – 288 ºC). Similarly, a Middle Triassic marble block in flysch achieved temperatures ~285 ºC according to Cal–Dol thermometry [8].

[1] Putiš *et al.* (2019) *Minerals* **9**, 652. [2] Faryad (1995) *Eur. J. Mineral.* **7**, 71-87. [3] Árkai *et al.* (2003) *Int. J. Earth Sci.* **92**, 68–85. [4] Conolly (2005) *Earth Planet. Sc. Lett.* **236**, 524–541. [5] Blancoe *et al.* (1994) *Geochim. Cosmochim. Ac.* **58** (10), 2277–2288. [6] Massone & Schreyer (1987) *Contrib. Mineral. Petr.* **96**, 212–224. [7] Cathelineau & Nieva (1985) *Contrib. Mineral. Petr.* **91**, 235–244. [8] Anovitz & Essene (1987) *J. Petrol.* **28**, 389–414.