Based on the zonal structure of jadeite we conclude:

1. Pacheco Pass metagreywackes proceeded from the stability field of Jd + Qtz in the P-T plane.
2. Jadeite crystallised with a large driving force of crystallisation, generated by the overstepping of the metagreywackes beyond the univariant P-T line for the reaction Ab = Jd + Qtz.
3. The final stage of crystallisation took place in the P-T field of Jd + Qtz.
4. The width of zonal structure decreases.
5. No evidence of prograde crystallisation and resorption has been presented so far.
6. The observed zonal structure cannot be explained by the P-T path proposed by Terabayashi et al. (1996). They implicitly assume fractional crystallisation by the formation of a rim that is in equilibrium with the matrix.
7. The preservation of metamorphic aragonite suggests that the metamorphic proceeded below ca. 350°C.

Franciscan metamorphic rocks in the Pacheco Pass area entered the P-T stability field of Jd + Qtz; similar condition probably attended recrystallisation at Ward Creek, too.

No evidence suggests that those Franciscan rocks were subducted to ca. 30 km, and stayed at that depth suffering isobaric heating, before being exhumed. The notion that the P-T path was produced by the deceleration of the subducting accretion complex that carried seamount is far from being proven.

# Evolution of a Tonalite Suite in the Northeastern Part of the Bohemian Massif

*Miloš RENÉ*

*Institute of Rock Structure and Mechanics, Academy of Sciences of Czech Republic, 182 09 Prague 8, V Holešovičkách 41, Czech Republic*

The tonalite suite represents an independent group of intrusions in the Lugicum whose stratigraphic position has been widely discussed. Most frequently, this suite is assigned to the syntectonic Variscan magmatism that preceded the intrusion of large monzogranitic plutons of the Lugicum. Rocks of the tonalite suite usually form dykes of varying thickness conformable with regional folding or disjunctive structures. They are known to occur frequently in the Zábřeh and Staré Město Units of metamorphic series of the Lugicum.

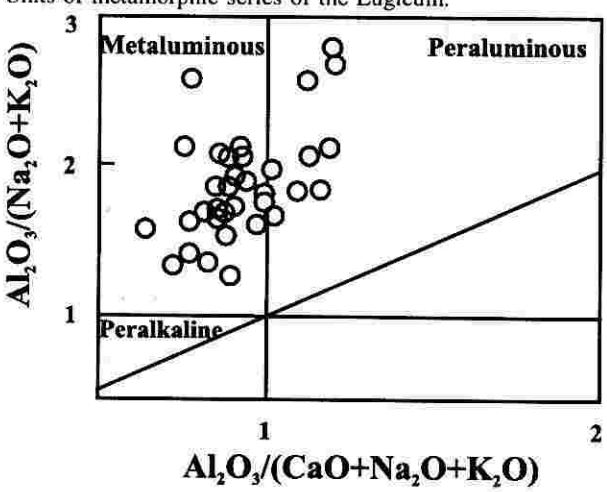


**Fig. 1.** Tectonic discrimination of rocks of the tonalite suite

Petrographically they comprise a wide variety of rocks from granodiorites, tonalites, quartz monzodiorites to quartz diorites. Biotite and hornblende-biotite granodiorites to tonalites predominate. Manifestations of metamorphism of varying degree are known to occur at contacts with the adjacent rocks and are marked by the presence of hornfels, biotite pearl gneisses and migmatites. Rocks of the tonalite suite show their internal structure to be conformable to foliation and usually exhibit a varying degree of parallel orientation of their grains.

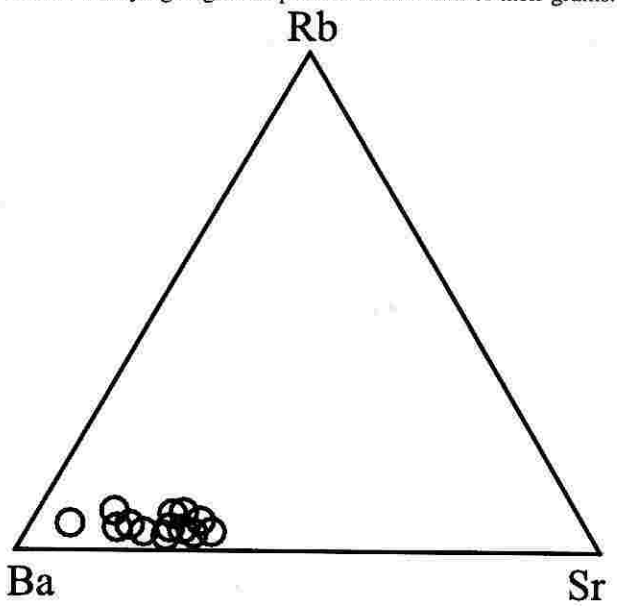


**Fig. 2.** Distribution of the Ba - Rb - Sr in rocks of the tonalite suite

Genetically, they mostly belong to I-type granites with the alumina saturation index values of 0.7 to 1.2. Lesser portion of rocks of the tonalite suite has a peraluminous character brought about by mixing of the original magma with metamorphosed sediments derived from the upper crust (Fig. 1). The tonalite suite has a marked calc-alkaline character. Rocks of the tonalite suite yield high Ba/Sr and Sr/Rb ratios (Fig. 2) and low contents of U and Th. The chemical composition of the tonalite suite suggests magma sources having come from the lower crust.