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## Correlation of Lithologically Contrasting Rocks from the Kutná Hora-Svratka Region, Czech Republic

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New mapping and geological research is focused on the north-western part of the Kutná Hora Crystalline Unit, parts of the Oheb and Podhořany crystalline units, Rataje Mica-Schist Zone, Svratka Crystalline Unit and the outer margin of the Strážek part of the Moldanubian Zone of the Bohemian Massif. Some parts of these units were ascribed to the Gföhl Nappe (Matte et al., Synek and Oliveriová 1993). Criteria used for mutual delineation of the units are in some cases outdated, and mostly not useful for modern interpretation of tectonometamorphic evolution of this part of the Variscan terrane. The main target of the present project of the Czech Geological Survey, Prague, is to distinguish metamorphically and tectonically uniform or contrasting segments aligned along the NE margin of the Moldanubian Zone and to contribute to the concept of tectonic evolution of the area.

The first stage of the project is focused on study and evaluation of older data, new sampling, and acquiring new petrological, geochemical and structural data from the Kutná Hora, Svratka, and Strážek crystalline units. The reliable older information by Koutek (1933, 1964), J. Losert (1967, 1971), M. Fišera (sheet 1:25 000 Vilémov with complete documentation), Z. Poubá (et al. 1987), J. Fiala et al. (1982), M. Holub (1985), J. Strnad (1972), the archive documentation of exploration (e.g., Mikuš et al., 1988), and modern geochemical isotope studies (Beard et al., 1991, Brueckner et al., 1991, Medaris et al., 1995) is compiled and combined with resampled geological material. Garnetiferous and garnet-free serpentized peridotites (Machart, 1984), eclogites (Medaris et al., 1995, 1998), calc-silicate rocks (Němec, 1991, Pertoldová et al., 1998), amphibolites (Kratochvíl 1947, Novák a Vrbová 1994), granulites and orthogneisses from the Plaňany, Malín, and Běstvina units, Kouřim Nappe, Štemberk-Čáslav Varied Unit and the Strážek part of Moldanubium, and the Svratka Crystalline Unit are studied and compared.

### Geochemical processes

A large-scale muscovitization of highly variable intensity can be traced from Kouřim and Plaňany units in the West to Havlíčkův

Brod at the SE. It affects orthogneisses, migmatites, mica-schists, gneisses, and other metasediments. The second process is fluid-related leaching of alkalis, leading to regional sillimanitisation in quartzofeldspathic rocks. Four stages of sillimanite growth of regional extent, overprinting older mineral assemblages, has been recognized: regional growth in matrix, nodular (Losert, 1965, Fiala et al., 1982), locally pseudomorphing Al-rich minerals, and a late deformation-related stage. A metasomatic growth of sillimanite nodules post-dates dominant foliation in leptynites, orthogneisses and biotite paragneisses, and may indicate thus a certain stage of evolution of one tectonic segment along the Moldanubian margin. Contrasting types of sillimanite require different tectonic regimes and P-T conditions.

Another factor which is interesting with respect to the regional tectonic evolution is occurrence and migration of boron. Two main B-bearing minerals, turmaline and dumortierite, and white micas as the third host mineral, indicate increased activities of boron (and fluorine) along the entire tectonic boundary. Migmatites, some orthogneisses, quartzofeldspathic, pegmatite accumulations and alpine-type veins of the Kutná Hora-Svratka region host all the three minerals, providing thus the opportunity for study of the B- and F-rich fluid distribution in the units studied in context with other geochemical changes.

The rock-forming minerals indicating the geochemical changes are detectable along several units studied. An important feature of the changes mostly overlap lithological boundaries. The above given features indicate regional geochemical changes related to the presence of metamorphic fluid and tectonic setting.

### Structural and tectonic problems of the Kutná Hora Crystalline Unit

Geological setting of the Kutná Hora Crystalline Unit (KHCU) has been interpreted as a multiply metamorphosed and intensely refoliated sequence of metamorphic rocks comprising advanced migmatites, orthogneisses, granulites, migmatitized par-

agneisses, mica-schists, amphibolites, relatively limited amount of varied members, and numerous boudins of mantle-derived serpentinites and eclogites. The highly heterogeneous sequence is divided by thrust tectonics, strike-slip zones and faults into contrasting elements representing formerly different crustal levels. The last coherent interpretation of the area defined Kouřim nappe, local Malín, Plaňany and Běstvina upper units of the Gföhl floor, and structurally underlying mica-schist zone (Syněk and Oliveriová, 1993). New mapping provided petrological and structural data on the extent of minor bodies of orthogneisses, amphibolites, serpentinites and eclogites, that do not correspond to the general superposition of local units forming the thrust stack, proposed by the last tectonic interpretation of the wider area. Discrepancies of the position of the lower structural units with respect to the "upper" "Gföhl" segments can be seen, e.g., near Libodřice, Plaňany, Ratboř, Malešov, Chotouchov, and Dobešovice. Although in the southern part of the KHCU the concept has not been proven in the detail, the central and northern part show the complex and unclear pattern of tectonically juxtaposed amphibolites, orthogneisses, high-grade relicts and mantle-derived ultrabasics.

Difficulties occur when we trace the KHCU rocks to the SE: mylonitized amphibolite and biotite-rich rocks rich in garnet, sheared pods and massive relicts forming Svatý Kříž metagabbro Massif and Běstvina granulite Unit, show frequently differences from the typical Gföhl members, as represented in S and SE Moldanubian Zone. New cross sections from the central part of the Moldanubian complex outwards through several specific outer units were constructed. Structural, petrographic and geochemic characteristics of rocks along these profiles will be systematically documented with the aim to elucidate relationships of individual constituting units and correlation of the KHCU, Polička and Svatka crystalline units, and the marginal parts of Moldanubicum, and to simplify the legend of the 1:25 000 map of the area.

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