Geophysical Research Abstracts, Vol. 8, 06505, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06505

Genetic diatexite-granite link in the Regensburg Forest, Bavaria?

W. Siebel(1), H. P. Hann(1), J. Rohrmüller (2), C. K. Shang(1)

(1) Institut für Geowissenschaften, Universität Tübingen, Tübingen, Germany, (2) Bayerisches Landesamt für Umwelt, Marktredwitz, Germany

Diatexite migmatites form a major rock formation in the Regensburg Forest, West Bohemian Massif. These rocks were derivedfrom metasedimentary precursors of mainly greywacke composition. Detailed field mapping on map sheet Stallwang has enabled to trace the distribution of various types of diatexites. Within the diatexites numerous discrete, kilometre-scale bodies of granitoids (granodiorites, biotite-granites, two-mica granites) occur. U-Pb and Pb-Pb geochronologic data (zircon, monazite) show that all these granitoids were formed at ∼322-325 Ma, i.e. when peak metamorphic conditions prevailed which lead to the formation of the diatexites. A long lasting key question in this area as well as in adjacent areas of the Regensburg Forest is whether the granites represent complete transformation products of the diatexites or formed as partial melts from similar or deeper crustal sources. To address this point geochemical analyses and geochemical modelling was performed. The diatexites form a continuous range in geochemical composition from granodioritic to granitic compositions. There is no strong textural evidence for melt segregation, magma ascend or formation of leucosomes within the homogeneous diatexites which could explain this trend. The range in compositionsof the diatexites is therefore interpreted to be mainly linked to original variation in source rock composition. The compositionof the diatexites overlaps with the field of the biotite-granites and two-mica granites. Textural observations show that the homogeneous diatexites represent highly granitized rocksthat did not segregate from source. This observation might suggest that the “true”, granitoids can be interpreted as an intrusive equivalent of the diatexites. Textural and isotopic comparison (Sr-Nd isotope data, inherited zircon systematics) supports a genetic granite–diatexite link. This finding is different from results based on partial melting models. A source-rock evaluation based on major and trace element covariations in experimentally de-

termined melts would imply that only the leucogranites can be regarded as products of partial melting equivalent to presently exposed diatexites. In the partial melting model, sources for the granites and granodiorites are constrained to be different from exposed diatexites and might comprise mafic pelites and amphibolites of the lower crust.