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Und unveröffentlichte Unterlagen aus der Steinbruchkartei der Geologischen Bundesanstalt.

Quantitative faunal composition of estuarine and shallow marine Upper Burdigalian deposits of the Korneuburg Basin in Lower Austria

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In the course of highway constructions (Wiener Außenring-Schnellstraße (S1)) a detailed sedimentological transect of 1.8 km length was logged in deposits of the Central Paratethys near the village of Stetten, N of Korneuburg in Lower Austria. A total of 324 sediment- and 118 molluscan samples was studied. The siliciclastic succession consists of pelitic and sandy sediments and sandstones and is rich in fossils. The fossil remains consist of sponges, corals, serpulids, molluscs, balanids, echinoderms, fish and micromammals. Quantitatively the molluscs dominate and have been studied in detail. 139 species were determined from more than 11000 shells. Two gastropod species, *Agapilia pachii* und *Granulolabium bicinctum* make up more than 53 % of the assemblage. Another 11 species (*Nassarius edlaueri*, *Bittium spina*, *Loripes dujardini*, *Hydrobia* spp., *Paphia subcarinata*, *Cyllenina ternodosa*, *Turritella gradata*, *Corbula gibba*, *Cerastoderma praeaplicata*, *Striarca lactea*, *Sandbergeria perpusilla*) each contributes more than 1 % to the total molluscan composition, but all other 126 species are quantitatively unimportant. A conspicuous alternation between intertidal and shallow subtidal mollusc associations is evident. The intertidal is dominated by the superabundant *Agapilia pachii* and *Granulolabium plicatum*, whereas the heavily bioturbated fully marine subtidal is characterized by a more diverse assemblage including *Turritella gradata*, *Nassarius edlaueri*, *Anadara diluvii* and various venerids. Additionally, layers with large fragments of *Crassostrea*

and thin coal deposits with *Terebralia bidentata* are quite abundant in the section. Washed in land snails (e.g., Planorbidae) and river snails (Melanopsidae) occur occasionally. This faunal composition, along with its typical alternation points to a vivid dynamic within this Lower Miocene, subtropical ecosystem in the paleo-estuary of the southern Korneuburg basin.

Sm-Nd dating of hydrothermal carbonate formation - the case of the Breitenau magnesite deposit

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Traditional genetic models for „Veitsch Type“ sparry magnesite mineralizations in Palaeozoic series of the Eastern Alps (Styria, Austria) assume either a syngenetic (sedimentary) origin or an epigenetic formation by metasomatic replacement in Eoalpine times (WEBER 1997, VAVTAR 1976). More recently, PROCHASKA (2000) proposed a model of magnesite formation by metasomatic replacement of Palaeozoic limestones due to infiltrating residual brines in Mesozoic times. Essential for a verification of one of these models is to obtain an appropriate age of magnesite formation. However, absolute age determinations are missing. We investigated the potential of the Breitenau magnesite deposit, situated in the very-low grade Laufnitzdorf nappe within the Graz Palaeozoic nappe complex (e.g., RANTITSCH et al. 2005), for Sm-Nd dating. Chemical analysis of fluids obtained by crush-leach experiments on the Breitenau magnesites yields high Br concentrations with low molar Cl/Br and Na/Br typical for residual brines whose composition is controlled by halite fractionation (e.g., PROCHASKA & HENJES-KUNST 2008). Mg isotope investigations also point to a dominant evaporitic component in the magnesites (HENJES-KUNST & BUHL unpubl. results).

Bulk magnesite samples from the Breitenau deposit are characterized by very low amounts of disseminated organic matter and clay minerals („matrix“). Magnesite and matrix were chemically separated and then analysed separately for trace-element composition by ICP-MS and Sm-Nd isotope composition by conventional TIMS technique. Magnesite yields consistent chondrite-normalized REE patterns with variable light-REE depletion (Sm/Nd between 0.33-0.82), slightly negative anomalies for Eu and in part also Ce. Nd concentrations are <3 ppm. Matrix material is enriched in the light REE (Sm/Nd 0.07-0.17) and in total REE (Nd up to several hundred ppm), but also displays slightly negative chondrite-normalized Eu and Ce anomalies. Sm-Nd isotope data for magnesite (14 samples) and matrix material (10 samples) yields an errochron (MSWD 7.7) with an age of 223.6±6.5 (2σ) Ma and an initial ¹⁴³Nd/¹⁴⁴Nd of 0.511903±0.000011 corresponding to ε_{Nd}-8.7. An isochron calculation based on the magnesite data only