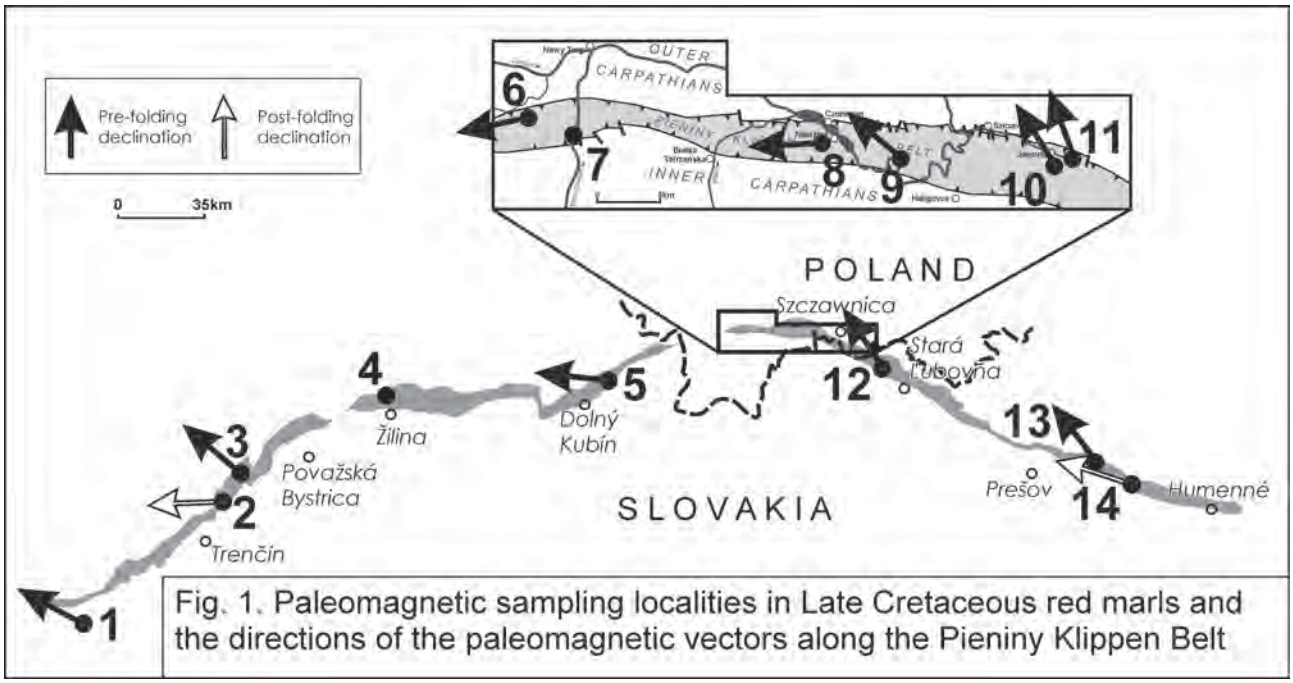

Fig. 1. Paleomagnetic sampling localities in Late Cretaceous red marls and the directions of the paleomagnetic vectors along the Pieniny Klippen Belt

components of the NRM and the magnetic lineations were interpreted in terms of tectonics. Within locality fold/tilt test proved that localities 2 and 14 possess post-folding, while 5, 9-13 pre-folding remanences (Fig. 1). The cases of uniform within-locality tilts fit the general paleomagnetic trend outlined by the best six localities. The rotations indicated are CCW from about 90° to moderate angles (Fig. 1). Concerning the magnetic fabric, well-defined lineations are observed in most cases due to compressional tectonics.

The lineations, similarly to the paleomagnetic directions do not follow the shape of the arc (Fig. 1), i.e. the popular model of oroclinal bending of the PKB is not supported by paleomagnetic nor by AMS data.

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3D modelling of an ammonite mass-occurrence within the Carnian Crisis (Taurus, Turkey)

Mayrhofer, S. & Lukeneder, A.

Geological and Palaeontological Department, Natural History Museum, Burgring 7, 1010 Vienna, Austria;
susanne.mayrhofer@nhm-wien.ac.at;
alexander.lukeneder@nhm-wien.ac.at

The Upper Triassic in general, and the Carnian stage in detail was devastated by one of the most severe ecological crisis of the Mesozoic Era, the Carnian Crisis (=Carnian Pluvial Event), when the carbonate platforms demised and with them most of the reef-builders disappeared. The *Orthoceltites* assemblage (ammonoids, cephalopods) was formed in the Carnian Crisis, now located at the boundary from Kartoz and Kasimlar Formation (Anatolia, Turkey), can act as proxy for the environmental activities and biotic crisis in the Carnian time. It has to be noted that the ultimate cause of this drastic Mesozoic crisis is still under comprehensive discussion. The main investigation topics of the project are the palaeoecologic, palaeobiogeographic, litho-, cyclo- and magnetostratigraphic development of the Upper Triassic (Carnian) ammonoid mass-occurrence at the Asagiyaylabel section in Anatolia (Turkey), formed during the Carnian Crisis. This area is a key section within the Taurids and has a connecting and intermediate position. Situated on the western end of the Cimmerian System at that time it shows connection to both, the Neo-Tethys and the Palaeo-Tethys Oceans. New insights into the taxonomy and the palaeoecology of the investigated ammonoids and associated macro- and microfossils are expected. The abundant ammonoid *Orthoceltites*, at least 200 000 000 !!! specimens, is assumed to be a new species. Further topics of investigation are the original position and environmental conditions of the sedimentation area at the Asagiyaylabel section, located in the Taurids. The formation of the

ammonoid beds is either autochthonous or allochthonous (transported). Expected 3D modelling results will be essential to reach geodynamic, palaeooceanographic and palaeobiological conclusions. This further leads to the question of the original water depths during the formation of ammonoid mass occurrences. As a multitasking project, one aim is to underline a crucial fact in working within different sciences as the Structural Processes Group at the Departments of Geodynamic and Sedimentology (University of Vienna) and the Geometric Modelling and Industrial Geometry group (3D technology at the Vienna University of Technology). Interdisciplinary collaboration with other scientists is essential in modern times. Statistical analysis of the orientation and relative position (e.g., imbrication) of the ammonoid shells can hint to current or transport directions. 3D modelling of calcite-cement distribution (representing geopedal structures) and post-diagenetic calcite-veins displacing several ammonoids will complete the geometrical reconstruction and shed light on the biostratinomic and additional diagentic processes. The combination in analysing different fossil groups with additional analysis of istotopic, magnetostratigraphic, cyclostratigraphic and geochemical features will help to extract details of the Upper Triassic history around one of the most severe crisis in the Mesozoic time, the Carnian Crisis. Investigations, undertaken at sections (e.g., Asagiyaylabel) possessing this time interval, can work as proxy for the major Upper Triassic Tethyan crisis. Environmental changes as displayed by the sea level and climate can become more obvious and the 'motor' behind the demise better understood.

Niobium-tantalum-tin-bearing minerals in pegmatites of the Eastern Alps: case studies

MELCHER, F.[1], GÖD, R.[2], KONZETT, J.[3] & MALI, H.[4]

[1] Bundesanstalt für Geowissenschaften und Rohstoffe, Stilleweg 2, D-30655 Hannover;
[2] Department für Lithosphärenforschung, Geozentrum, Althanstrasse 14, A-1090 Wien;
[3] Institut für Mineralogie und Petrographie, Innrain 52, A-6020 Innsbruck;
[4] Department für Angewandte Geowissenschaften und Geophysik, Montanuniversität Leoben, Peter-Tunner-Straße 5, A-8700 Leoben

Niobium-tantalum-tin mineralisations are not particularly abundant in the Alps. Spodumene-bearing pegmatites, however, are known from several areas within the Austroalpine basement nappes (NIEDERMAYR et al. 1988). Here, we report on results of a study on tantalum-niobium and tin oxide phases associated with pegmatites in three areas of the Eastern Alps.

- Hohe Kreuzspitze area, Passeier Valley, South Tyrol: a vein-like pegmatite hosted by metapelites of the polymetamorphic Ötztal-Stubai crystalline basement immediately to the south of the Schneeberg Complex. The weakly zoned pegmatite forms boudins of meter thickness, and is composed of quartz, albite, muscovite, with accessory beryl, garnet, zircon, phosphates, Sn- and Ta-oxide phases (ixiolite, tantalite-(Fe), columbite-(Fe), ferrotapiolite, Ta-rich rutile, cassiterite). U-Pb (LA-ICP-MS) analysis of one large and complexly zoned ixiolite crystal revealed two populations at 300 and 200 Ma.
- Pusterwald-Bretstein-Lachtal area, Styria: zoned spodumene-bearing pegmatites hosted by mica schist, marble, amphibolite and quartzite of the Rappold Complex (MALI 2004). Pegmatites of probable Permian age carry accessory graphite, garnet, tourmaline, apatite, beryl, pollucite, cassiterite, Nb-Ta oxides (columbite-(Mn), tantalite-(Mn), pyrochlore, microlite, fersmite, aeschynite, wodginite, ixiolite, tapiolite), zircon, and uraninite.
- Weinebene/Brandrücken, Koralpe, Carinthia: extensive unzoned, dikelike spodumene-bearing pegmatites hosted by eclogitic amphibolites and kyanite-bearing micaschists (GÖD 1989). The pegmatites carry accessory apatite, beryl, cassiterite, columbite-(Fe) and zircon; titaniferous columbite with exsolved niobian rutile was investigated by CERNY et al. (1989). Rb-Sr whole rock dating yielded an „approximate age" of 280 Ma (GÖD 1989).

The Nb-Ta-Sn-bearing oxides reveal large variations in the XMn versus XTa diagram, following different fractionation trends as indicated by arrows (Fig. 1A). REE concentrations vary by orders of magnitude, and reveal variably fractionated patterns (Fig. 1B).

Mineralogy and Ta-oxide chemistry allow classifying them as rare-element pegmatites of the LCT (Li-Cs-Ta) family; Hohe Kreuzspitze is representative of the beryl-type; Pusterwald of the complex spodumene-type; and Weinebene of the albite-spodumene-type. Trace element concentrations mimic local conditions of melting, differentiation, fractionation and wall-rock interaction. Due to their polymetamorphic histories, intrusion ages are not yet fully explored, but assumed to reflect the Permian high-temperature, low-pressure metamorphic event known throughout the Austroalpine basement units.

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Rb-Sr Isotopendatierung an Sphalerit sowie Sr- und Sm-Nd-Isotopendaten von Karbonat und Fluorit der Zn-Pb Lagerstätte Bleiberg (Kärnten)

MELCHER, F.[1], HENJES-KUNST, F.[1], HENJES-KUNST, E.[2], SCHNEIDER, J.[3] & THÖNI, M.[4]

[1] Bundesanstalt für Geowissenschaften und Rohstoffe,