

Granitoid gneisses and granites N of the Orlicka-Snieznik Complex in southern Poland are exposed in isolated occurrences the largest of which is the Strzelin Metamorphic Unit. Six zircons of the Strzelin gneiss have a mean age of 1020 ± 1 Ma, and abundant xenocrysts vary in age between 1135 and 1767 Ma. The Goszczewice augen-gneiss N of Strzelin was dated at 513 ± 1 Ma and carries 1096-1301 Ma xenocrysts. The Maciejowice granite-gneiss, previously correlated with the Silesian domain in Czech Republic has an age of 501 ± 1 Ma (xenocryst age of 1694 Ma), identical to ages of the Snieznik and Gieraltow gneisses of the Luga domain. Finally, the Doboszowice granite-gneiss NW of Paczków has an emplacement age of 380 ± 1 Ma with a xenocryst at 592 Ma.

The above ages conclusively demonstrate the existence of extensive Grenville-age and older basement in the fore-Sudetic block of Poland to which the 2 Ga gneiss of the Velké Vrbno unit probably also belongs. This basement was tectonically sandwiched between younger rocks during repeated Palaeozoic deformation associated with the collision of the West Sudetes with Baltica and further convergence during the Variscan event.

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Mass accumulations of regular sea urchins in the Late Badenian (Middle Miocene) of the Leitha Platform (Eastern Austria)

A. Kroh¹, M. Harzhauser², W.E. Piller¹

¹Institut für Geologie und Paläontologie, Karl-Franzens-Univ. Graz; ²Naturhistorisches Museum Wien, Österreich

The abandoned quarry at Winden is the north-eastern most outcrop along the Badenian Leitha Platform. Geographically the section is already part of the Danubian Basin, although a narrow connection to the Eisenstadt-Sopron Basin was warranted since the Middle Badenian some km in the south-west of Winden in the North of the Fertőrákos Platform. According to Schmid (1968) the sediments exposed in Winden are of Late Badenian age (Bulimina-Bolivina zone).

The predominating limestone facies is represented by bright yellow calcarenites consisting mainly of corallinean debris, accessory components are foraminifers, echinoid debris and bryozoans. These are interbedded by greenish, marly layers of several cm thickness. In addition, two layers of scattered pebbles are observed within the rather monotonous section. Sedimentary structures, such as erosive boundaries, reworked clay clasts and broad channel cuts document the transport of the corallinean debris. The origin of the coarse sediment was the nearby Leitha Platform from where currents, storms or gravity transport moved the debris towards the now exposed slope.

Echinoids are the most common macrofossils found within the section. They are represented by ossicles of the regular echinoid *Schizechinus dux*, which is especially abundant and documented by test fragments, spines, teeth, parts of the Aristotle's lantern and plates of the apical disc. Other echinoids such as *Echinolampas hemisphaerica* and "*Cidaris*" *schwabenaui* are rare and represented only by coronal fragments and spines. Aside from echinoderms, only calcitic molluscs occur in larger abundance due to the preservation bias. Among these pectinids, spondylids and oysters predominate the spectrum. Especially *Flabellipecten leythajanus*,

Macrochlamis nodosiformis and *Ostrea digitalina* have already been documented by Schmid et al (2001) to be common elements of the agitated shallow marine environments of the small carbonate platforms bordering the Late Badenian Eisenstadt-Sopron Basin. Other organism groups, such as brachiopods (*Megathiris detruncata*), balanids and polychaets (*Ditrupa* sp.) are rare and probably transported into this environment together with the corallinean debris.

In the base of the section a mass accumulation of *Schizechinus dux* is preserved within a limestone bed. Several hundred coronas of this species are located in public and private collections, which include also limestone slabs with tens of specimens within a few square decimetres. The specimens are denuded coronas and lie chaotically, both in life position and overturned within the bed. The apical disc is missing in nearly all specimens. The spines and lantern ossicles can often be found within the corona of the echinoids. Most of the specimens are of approximately the same size and document only a small part of the size range known of this species. Regular echinoids have a poor fossil record, they are usually rare and poorly preserved and thus heavily taphonomically biased. The reason for this are the organic sutural connections, without any interlocking structures, which would strengthen the corona. Experimental disintegration of extant regular sea urchins showed that they did readily disarticulate, especially under the influence of turbulence and temperature. Even when buried within the sediment, regular echinoids tend to disintegrate within a few weeks due to bioturbation.

The mass accumulation of *Schizechinus dux* within this bed is related to a mass mortality event and subsequent transport into this depositional environment, where the

coronas were preserved by the overlying sediment. Possible mechanisms of this mass mortality event are discussed and tested how they fit into the geological/sedimentological framework. Hypoxia, for

example, as discussed in Schmid et al. (2001) for conspecific specimens from the nearby locality St. Margarethen, are unlikely, because of the different mode of preservation.

Erstarrung im Stressfeld: Gefügeentwicklung und Gefügeanalytik in syntektonischen Granitoiden

J.H. Kruhl

Fachgebiet Tektonik und Gefügekunde, Technische Universität München, D-80290 München

Granitische Schmelzen, die in einem regionalen Stressfeld erstarren, entwickeln Gefüge, mit deren Hilfe sich vor allem die Kinematik und die Temperaturbedingungen während der Kristallisation untersuchen lassen. Kompliziert wird die Situation durch das Einwirken diverser Rahmenbedingungen wie Temperatur-Differenz zwischen Schmelze und Nebengestein, Art und Stärke des regionalen Differenzstresses, Kristallanteil in der Schmelze, Strainrate, Geometrie der Intrusion etc. Umgekehrt bietet sich dadurch aber auch die Möglichkeit, Informationen über eben diese Rahmenbedingungen zu erhalten.

Etablierte Methoden verwenden die Orientierungs- und Verteilungsmuster von (vor allem K-Feldspat-) Einsprenglingen, um Aussagen über die Kinematik während der Kristallisation zu treffen. Darüber hinaus kann sich auch die Verformung des Silikat-Netzwerkes der Schmelze auf die Kristallisation von Matrix-Mineralen auswirken, die damit zu Informanten der Kinematik in einsprenglingsfreien Schmelzen vor der Kristallisation werden.

In letzter Zeit rücken mikrogefügebezogene Methoden immer stärker in den Vordergrund. Vor allem intrakristalline Deformationsgefüge in Quarz und Feldspäten (Subkornmuster, Rekristallisationen, Korngrenzgeometrien und kristallographische Orientierungen der Grenzen) und kristallographische Regelungen erlauben

es, hochtemperierte Verformungen im Kristallbrei zu erkennen und die Deformationsgeschichte einer Intrusion während der Kristallisation und der nachfolgenden Abkühlungsphase zu entschlüsseln.

Anhand von syntektonischen Intrusionen der Varisziden NE-Sardiniens und der südlichen Böhmisches Masse, des Dom-Feliciano-Fold-Belts/Südbrasilien und des permischen Larvik-Plutons/Südnorwegen sollen Prinzipien der Gefügeentwicklung dargestellt und Vorteile, Begrenzungen und Entwicklungsmöglichkeiten der Gefügeanalytik diskutiert werden.

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Gesteinseigenschaften: eine Unterrichtseinheit für die Grundschule

J.H. Kruhl¹, A. Tausendfreund²

¹ *FG Tektonik und Gefügekunde, T-U München, D-80290 München;* ² *Grundschule Roth, D-63571 Gelnhausen*

Für dieses mehrtägige Geologie-Projekt für die 4. Klasse einer Grundschule werden zum einen Struktur und Ablauf des Unterrichts präsentiert, zum anderen Art und Inhalt der Fachvermittlung. Die Struktur und der Ablauf des Unterrichts richten sich nach der Klassenstufe, der Größe der Klasse, dem Vorwissen, dem Engagement der

Kinder und weiteren Faktoren. Art und Inhalt der Fachvermittlung hängen darüber hinaus auch vom geologischen Umfeld der Schule ab, d.h. davon, welche Gesteine in der Umgebung vorkommen, in Steinbrüchen sichtbar sind oder an Häusern auftreten.