permitted field trip carried out. Moreover, quarries in the Ruster Hills (e.g., so called Roemersteinbruch St. Margarethen) and in southern Styria (subsurface Roemerbruch Aflenz) were also part of the excursion. Further samples of Leitha Limestone quarries from Nußdorf (Vienna) and Pfaffenberg (Deutsch-Altenburg) were studied for comparison.

Carbonate microfacies analysis of 70 thin sections by stereo microscope was applied, quantity estimations are based on comparison charts.

From the 30 quarries that were subject to general survey, rock samples were taken for macroscopic identification and some of them chosen for preparation of thin sections. From 12 of these quarries additional cores (35 mm diameter, up to 15 cm long) were drilled. The core samples served for geophysical and geotechnical laboratory tests and for thin sections as well.

The field investigations and quarry descriptions contribute to the mineral raw-materials archive and database of the Geological Survey. Based on the available geological maps the Leitha Limestone succession covers a basement relief, which occurs as topographical heights, called Schieferberg, Zeilerberg and Königsberg with Semmeringquarzit and Middle Triassic dolomite and with the latter cropping out as erosional and quarry relics south of Kaisersteinbruch. Although the map differentiates between Badenian 'Leithakalk' and Sarmatian 'detritaerer Leithakalk', this was not obviously recognizable in the field.

The thin sections were grouped according to their microfacies characteristics and resulted in: Micro-breccias and conglomerates with reworked dolomite basement rocks, (par-)autochthonous bioclastic corallinacean-bryozoan boundstones as well as bryozoan-serpulid boundstones, pack- and rudstones with mainly corallinacean algae and eventually rhodolithes, well sorted grain- and rudstones (detrital calcareous sandstones) with varying amounts of corallinacean algae, bioclasts, foraminifers and lithoclasts. Occasionally important are mixed carbonate-siliciclastic types. Few samples are dominated by molluscs. Some textures, cements and diagenetic features are indicative of special environments. Concerning the coralline algae flora, up to now, mainly *Lithothamnium*, *Lithophyllum* and *Sporolithon* were recognized.

A preliminary age differentiation between Badenian and Sarmatian is mainly based on foraminifers and the occurrence of ooids.

It can be concluded that the microfossil record in the thin-sections from these isolated samples could be identified to a limited extend. The resulting microfacies types were tested for their regional extent. For further investigation, the significance of these samples should be proven as they should serve for recognition in stone monuments, and for lithostratigraphical contribution.

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Microbial carbonates in Miocene reefs in the Mahakam Delta in East Kalimantan, Borneo, Indonesia

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Microbial carbonates are deposits that form by the activity of bentic microbial communities. Microbialites usually form domical, columnar or conical structures and can

have laminated, clotted, dendritic or homogenous macrofabric. They have a broad distribution and can grow in a variety of different environments such as hot springs, freshwater lakes, hypersaline lakes, reefs and other marine environments. This research focuses on microbialites associated to coral reefs.

Coral patch reefs in the Miocene Mahakam Delta in East Kalimantan (Borneo, Indonesia) grew in shallow marine turbid waters. These patch reefs developed from delta front to deeper (prodelta) settings in areas with temporary reduced siliciclastic input. Langhian reef deposits are well exposed in limestone quarries in the Samarinda area and locally include microbial carbonates. Two different types of microbial carbonates have been found around Samarinda in two localities 2 km apart.

These sections were logged in detail and 208 samples were collected. Meso and macrostructure of microbialites were identified at the outcrops. Thin sections from carbonate samples were examined under optical microscope and microfacies were classified using the DUNHAM (1962) and EMBRY & KLOVAN (1971) terms. The carbonate content was analyzed using Total Inorganic Carbon analysis, with 12% carbon as a standard for carbon calibration. In the northern section, microbialites occur as low-relief domes, up to 2 m wide and 0.5 m high, with internal lamination, developed around large coral fragments at the transition from reef deposits to fine-grained siliciclastics.

The second type of microbialites has been found in the southern locality as decimeter-scale nodules ('megaoncoids') formed around nuclei of large coral fragments. Small nodules were bound together into bigger nodules. Microbial micrite with laminated to digitated fabrics intergrew with coralline algae to form the thick covers of these 'megaoncoids', which laterally change into coral boundstones.

In both sections microbialites are not components of the reef framework. They grew around large coral fragments on the flanks of the patch reefs. The microbialites that form low relief domes developed on a nearly flat, stable seafloor seawards of the patch reef. The 'megaoncoids' in the southern section formed as a result of downslope movement of coral fragments coated by microbialite/coralline algal crust. The steep slope at the flank of the patch reef favoured falling and overturning of encrusted corals and continued growth of microbial crusts on other sides of nodules.

Lower Cretaceous calcareous algae from Herisht Mount (Ardakan area, Central Iran)

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In spite of the several publications in the last decade, little is known about Lower Cretaceous calcareous algae from Iran. The calcareous algae association described here adds to the knowledge on algal paleobiodiversity in Central Iran, and brings new insights into the regional paleogeographic framework during the Lower Cretaceous.

Herisht Mount is located 14 km north of Ardakan town (Central Iran). Geologically, the area belongs to the Yazd tectonic block. The studied section is about 640 m-thick; it contains conglomerates at the base followed by 40 m-thick limestones. They are covered by a 63 m-thick green shale level, followed by several hundreds of stratified limestones with mollusks, foraminifers, and calcareous algae.