Triaxial experiments on Leithakalk: mechanical and microstructural data of a high porosity limestone

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In porous granular sediments, strain localizes as tabular zones of grain rotation and fracturing, instead of forming discrete slip surfaces as in low porosity rocks. The mechanical properties of this mode of failure have been extensively studied in siliciclastic rocks. Depending on the porosity and differential stress, the material fails under dilatancy or compaction combined with a variable degree of shear. In contrast, only few field or experimental studies have been conducted so far on high porosity carbonates. Especially the occurrence and degree of mechanical twinning in addition to grain crushing, as well as the localisation of strain in compaction bands are still in discussion. In this study, we performed triaxial deformation experiments on a Miocene carbonate grainstone (Leithakalk) from the Eisenstadt-Sopron Basin, Austria. Prior to thin section preparation, we identified shear and compaction bands using µCT scanning. Fracturing occurs (1) along uncemented grain contacts between bioclasts, or (2) within bioclasts with high microporosity. Idiomorphic cement crystals show an increasing number of twin lamellae with increasing axial strain, which occur prior to fracturing. The mechanical data indicate an increase in yield strength with decreasing porosity, and strain hardening at higher confining pressure.

Integration of high resolution satellite imagery and surface geochemistry: A case study from the Kurdistan Region of Iraq)

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Remote sensing technology is an effective and widely established analytical method for geology and petroleum exploration, and has proven extremely beneficial by providing access to dangerous or previously inaccessible sites. The study area Zagros fold and thrust belt in Kurdistan region of Iraq is heavily underexplored and there are places where it is very difficult to operate field works due to the security and difficult terrain. Therefore using remote sensing technics is very valuable for regional screening and evaluations to find more promising areas to do further operations e.g. shooting seismic and drilling wells.
Hydrocarbon trap seals range from very efficient to relatively inefficient. Thus, many hydrocarbon accumulations have some leakage to the surface. Leaking hydrocarbons effect a host of changes on the rocks and soils through which they pass. At the surface, subtle differences in mineral composition or vegetation manifest these changes. During the first phase of the study medium and high resolution satellite data have been used to identify alteration anomalies which could be representative of hydrocarbons. In the second phase, rock and soil samples have been collected in the field within the places that was highlighted by satellite studies as alteration anomalies. Samples have been analysed by Synchronous Scanned Fluorescence (SSF) method and the results have been combined and interpreted with high resolution satellite data to identify life oil seeps at the surfaces.

Rock'n Roll in Lend - eine vorhersehbare Katastrophe?

FEGERL, L.
Amt der Salzburger Landesregierung

Der Bogensberger Palfen beschäftigt die Landesgeologie seit rund 25 Jahren. Seit dem damaligen Bau der B311 - Pinzgauer Bundesstraße steht der auffällige Felskopf westlich der Ortschaft Lend unter Beobachtung. Dennoch überraschte am 27.8.2011 der Absturz von ca. 10.000m³ Felsmaterial auf die darunter verlaufende Landesstraße und in die Salzach. Eine monatelange Sperre und aufwendige Felsabtrags- und Sicherungsarbeiten waren die Folge.

Im Vortrag thematisiert werden neben der Historie mit Prognosen und Fehlprognosen auch Probleme, Lösungen und Erfahrungen, sowie grundsätzliche Abwägungen zum Thema Gefahren erkennen, beobachten und bewältigen.