

## DETERMINATION OF EMISSION AND OXIDATION FACTORS IN MONITORING CO<sub>2</sub> EMISSIONS FOR EMISSION TRADING SCHEME

*Pavel FOTT*<sup>1)\*</sup>, *František KOLÁŘ*<sup>2)</sup> and *Dušan VÁCHA*<sup>1)</sup>

1) *Czech Hydrometeorological Institute, 143 06 Praha 4*

2) *Institute of Rock Structure and Mechanics, Czech Academy of Sciences, Praha*

\*Corresponding author's e-mail: [fott@chmi.cz](mailto:fott@chmi.cz)

*(Received December 2005, accepted June 2006)*

### Abstract

EU Emission Trading Scheme, which is applied in EU Member States to decrease CO<sub>2</sub> emissions, requires accurate, reliable, comparable and transparent methodology for monitoring, reporting and verification of emissions. Existing Monitoring and Reporting Guidelines provides operators only with general and undetailed instructions. This paper should provide the plant operators with guidance for a better understanding, interpretation and mastering of the methods of monitoring and reporting CO<sub>2</sub> emissions for the purposes of emission trading. This paper is focused on experimental determination of emission and oxidation factors of solid fuels and on calculation of emission factors of gaseous fuels from their composition.

**KEYWORDS:** emission and oxidation factors, CO<sub>2</sub> monitoring, greenhouse gas, emission trading

## CO-COKING OF STAMPED CHARGES WITH THE WASTE ORGANIC ADMIXTURES

*Pavel STRAKA*

*Institute of Rock Structure and Mechanics, Academy of Science of the Czech Republic,  
V Holešovičkách 41, CZ-182 09 Prague 8, Czech Republic*

*Corresponding author's e-mail: [straka@irsm.cas.cz](mailto:straka@irsm.cas.cz)*

*(Received September 2006, accepted October 2006)*

### Abstract

By use of plastic or rubber admixtures in the stamped charges, it is possible to affect the properties of tar, in contrast to the calorific value of resulting coking gas; further, it was found that the reactivity- and strength parameters of the obtained blast-furnace coke are good or acceptable. Unused plastics or rubber can economize on part of the coal used in a stamped charge. Additions of both light and heavy plastics can be used up to 5 % of a charge weight; in the case of rubber it is not advisable to exceed 2 wt.-% in a charge. In contradiction to the other methods, which process the unused plastics of up to a content of 1 % in a charge, it is possible, in the case of used stamping method, to process even 2 % or more.

**KEYWORDS:** coke, co-coking, charge, plastics, rubber

**VERMICULITE MINERALIZATION ASSOCIATED WITH ULTRAMAFICS  
IN AGASTHYAPURA AREA, MYSORE DIST., KARNATAKA STATE,  
INDIA - A MINERALOGICAL STUDY**

**Kikkeri N. PRAKASH NARASIMHA <sup>1)\*</sup>, Honnaiah RAMALINGAIAH <sup>1)</sup>, Karel MELKA <sup>2)</sup>,  
K. KRISHNAVENI <sup>1)</sup>, Pinnelli S. R. PRASAD <sup>3)</sup>, Chikkamadaiah KRISHNAIAH <sup>4)</sup>,  
Katihalli S. JAYAPPA <sup>4)</sup> and Atmi V. GANESHA <sup>4)</sup>**

1) Department of Geology, University of Mysore, Manasagangotri, Mysore-570 006, India

2) Institute of Geology, Academy of Sciences of the Czech Republic, Rozvojová 135, 165 02, Praha 6-Lysolaje, Czech Republic

3) P.S. R. Prasad, M.P.D, N.G.R.I, Hyderabad-500 007, India

4) Ocean Science and Technology Cell (Marine Geology and Geophysics), Mangalore University, Mangalagangothri, Mangalore- 574199, India

\*Corresponding author 's e-mail: prakashnarasimha@yahoo.com

(Received September 2006, accepted November 2006)

**Abstract**

Vermiculite in its macroscopic form occurs in the Archaean supracrustal rocks exposed towards east of Sargur supracrustal complex in Karnataka state. The present study forms the first detailed work on the occurrence of vermiculite associated with the ultramafic rocks in the Agasthyapura, which lies in the long. 76° 50' 658" and lat. 12° 15' 976". Petrography, X-ray diffraction, FTIR, DTA&TGA, SEM, fluid inclusion and electron probe analyses are presented in this contribution study. The probable origin of vermiculite from biotite through hydrobiotite is discussed.

**KEYWORDS:** vermiculite, hydrobiotite, Sargurs, Agasthyapura, Mysore district, Karnataka

**ENVIRONMENTAL RECORD IN SOILS ON LOESS IN NORTHERN MORAVIA,  
CZECH REPUBLIC**

**Anna ŽIGOVÁ <sup>1)\*</sup> and Martin ŠŤASTNÝ <sup>2)</sup>**

1) Institute of Geology, Academy of Sciences of the Czech Republic, Rozvojová 269, 165 00 Praha 6, Czech Republic, phone number: ++420-233 087 262, fax: ++420-220 922 670

2) Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, V Holešovičkách 41, 182 09 Praha 8, Czech Republic, phone number: ++420-266 009 262, fax: ++420-284 680 649

\*Corresponding author 's e-mail: zigova@gli.cas.cz

(Received October 2006, accepted November 2006)

**Abstract**

\*The evolution of soil cover in the area of Litovel has been determined on the basis of grain-size distribution, mineralogy of clay fraction, chemical and micromorphological analyses. The object of the present study was a chronosequence of soils in Pleistocene sediments. Paleopedological data indicate that the area underwent environmental changes including several cycles of pedogenesis. This area provides evidence of at least two first-order warm periods. The highest degree of polygenesis can be demonstrated by Braunlehm-like Parabraunerde (PK V – Late Holstein Interglacial) and Chernozem which evolved from Haplic Luvisols (PK IV – warm period within the Riss glacial). The upper part of the profile documents different types of pedosediments which indicate erosion processes.

**KEYWORDS:** evolution of soil cover, micromorphological analysis, clay mineralogy, pedogenesis

## CHARACTERISTICS OF WIND-INDUCED WAVES IN A SHALLOW WATER ZONE

*Tamara SPANILÁ\* and Karel JAHODA*

*Institute of Rock Structure and Mechanics AS of the Czech Republic, V Holešovičkách 41, CZ-18209 Prague 8, Czech Republic, Tel.: 00420266009327, Fax.: 00420284680105*

*\*Corresponding author's e-mail: tamaraspanila@seznam.cz*

*(Received March 2006, accepted November 2006)*

### Abstract

The parameters determine waves energy in shallow water zone that pronounces the crucial influence on abrasion of both natural and artificially paved banks. The effort to re-development of the relations was found as absolutely necessary for waves energy calculations. Substantial benefit of the work is found not only in enabling the use of computers while avoiding time-consuming and difficult application of diagrams, but namely in recent recognition that the calculation results showed a risk of underestimate the real impact of wind-induced waves. In some cases, the calculations respecting the above standard produce lower values of waves height and time-period and thus also lower values of wave energy.

**KEYWORDS:** height, length and time-period of the waves, energy of waves, shallow water zone

## SLOPE FAILURES AROUND THE ROCK CASTLE DRÁBSKÉ SVĚTNIČKY, CZECH REPUBLIC

*Jan RYBÁŘ\*, Josef STEMBERK and Filip HARTVICH*

*Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, V Holešovičkách 41, 182 09 Prague, Czech Republic.*

*\*Corresponding author's e-mail: rybar@irms.cas.cz*

*(Received August 2006, accepted October 2006)*

### Abstract

Stability conditions in a wider surrounding of the rock castle Drábské Světničky (Drábské Rooms) near the town of Mnichovo Hradiště were investigated. The area which has been intensively disturbed by large old as well as present slope movements is located in the north-western part of Příhrazy Platform. Solid, thick bedded sandstones, well resistant to weathering, are lying on claystones apt to plastic deformations. Marginal sandstone blocks separate, move down on the slope and sink into the plastic bedrock. As a result, block fields with many crevasses develop. In rock walls that separate individual blocks, rockfalls originate and central, as well as lower parts of the slopes develop large landslides. A zone comprising up to 400 m wide rim of the high and exposed platform has been subject to a process of loosening. A local group of tower-like sandstone blocks was used in the 15th century to build a small rock castle called Drábské Světničky. An extensive landslide that destroyed a substantial part of the village of Dneboh in June 1926, reached in its separating zone up to the toe of marginal rock towers belonging to the complex of Drábské Světničky with the result of local movement activation. Marginal zones of the flat land behind display fresh linear, as well as oval depressions and sinks. Fissure and pseudocarst caves develop. Present activity of the movements has been evidenced by dilatometric measurements on two selected rock objects where movement rates reached 1 to 2 mm per year in average.

**KEYWORDS:** landslide inventory, landslide susceptibility mapping, slide, spread, fall, dilatometric measurements, pseudocarst

**ASSESSMENT OF FACTORS AND CONDITIONS INFLUENCING BANK  
STABILITY OF FUTURE LAKES**

***Tamara SPANILÁ<sup>1)</sup>\*, Zdeněk KUDRNA<sup>2)</sup>, Vladislav JOHN<sup>3)</sup>,  
Filip HARTVICH<sup>1)</sup> and Vladimír CHOUR<sup>4)</sup>***

*1) Institute of Rock Structure and Mechanics, Czech Academy of Sciences, V Holešovičkách  
41, 182 09 Prague 8, Czech Republic, Tel.: +(420)266009327, Fax.: +(420)284686645*

*2) Faculty of Science, Charles University in Prague, Albertov 6, 128 43 Prague2, Czech  
Republic,*

*Tel.: +(420) 221951555, Fax.: 221952180*

*3) Faculty of Civil Engineering, Czech Technical University. Tel.: +(420) 224354616,  
Fax.: +(420)224355408*

*4) Vikova 15, Prague 4, 140 00, Tel: +(420)241442671*

*\*Corresponding author's e-mail: spanila@irsm.cas.cz*

*(Received April 2006, accepted August 2006)*

**Abstract**

While including gradual long-term flooding of individual residual mining pits, the re-vitalization program of the Podkrušnohorská brown-coal basin area has to assure - beside general water quality standards - satisfactory stability level of future lake banks and their wider environment as required for safe usage of future water lakes.

General assessment of factors and conditions influencing bank and/or slope stability of future lakes was realized within the frames of the Czech Republic Academy of Sciences grant project. The grant project solutions include a study of exogenous processes on localities where the mining has been terminated. Also, prognoses were developed on behaviour of future banks during flooding and subsequent operation of future lakes. The presented paper is focused on assessment of mayor factors that participate on initiation and intensity of the bank abrasion and sliding deformations.

**KEYWORDS:** flooding of residual mining pits, dangerous geodynamic phenomena, stability of banks and slopes

## STATION CORRECTION OF PATNET NETWORK FOR IMPROVEMENT OF EARTHQUAKE LOCATION IN CENTRAL PART OF GULF OF CORINTH

*Jaromír JANSKÝ<sup>1)\*</sup>, Efthimios SOKOS<sup>2)</sup>,  
Anna SERPETSIDAKI<sup>2)</sup> and Helene LYON-CAEN<sup>3)</sup>*

*1) Faculty of Math. & Phys., Charles University, Prague, Czech Republic*

*2) Seismological Laboratory, University of Patras, Greece*

*3) Laboratoire de Géologie, Ecole Normale Supérieure, Paris, France*

*\*Corresponding author's e-mail: jansky@seis.karlov.mff.cuni.cz*

*(Received May 2006, accepted August 2006)*

### Abstract

PATNET, the seismic network of the University of Patras, monitors regularly the seismic activity in the whole western Greece, using for a HYPO location a model, derived as an average representation for this broad area. One of the active regions of the western Greece is the Gulf of Corinth, which central part lies partially on the edge of the PATNET. Due to this and to the fact that the PATNET stations have mostly the vertical component only, the PATNET HYPO location of events in this region are often characterized by large standard errors in epicentres and especially in depths. Using a sequence of small earthquakes that occurred from February to May 2001 close to the city of Aigion, and was recorded by PATNET and as well by local Corinth rift laboratory (CRL) three-component network (CRLNET), we have derived for PATNET station and local model constants whose application improves the PATNET HYPO location of events in central part of Gulf of Corinth. These constants represent the main result useful for improvement of the future PATNET location in the given region.

**KEYWORDS:** PATNET network, Aigion Greece 2001 earthquake sequence, CRLNET network, hypocentre relocation

## NEW LOCAL SEISMOLOGICAL NETWORK IN SOUTHERN BOHEMIA

*Vladimír NEHYBKA \*, Romana HANŽLOVÁ, Jan OTRUBA,  
Jan ŠVANCARA and Radim VLACH*

*Institute of Physics of the Earth, Faculty of Science, Masaryk University, Tvrdého 12, 602 00 Brno, Czech Republic*

*Phone: +420 543 423 116, Fax: +420 543 423 120*

*\*Corresponding author's e-mail: Vladimír.Nehybka@ipe.muni.cz*

*(Received April 2006, accepted July 2006)*

### Abstract

A modern seismological network with telemetric data transfer has been constructed in southern Bohemia. The network is made up of 5 stations equipped with Reftek DAS (Data Acquisition System) 130-01 Broadband Seismic Recorders and GeoSIG VE-53 triaxial velocity sensors with a natural frequency of 1 Hz. The network works at a sample rate of 250 Hz. The main purpose of this network is to monitor local seismicity in southern Bohemia with a special focus on seismic activity in the vicinity of the Temelin NPP. The sensitivity in the central part of the network is at least 0.0 ML. In addition to monitoring local tectonic movements it also monitors the effects of Alpine earthquakes in the area of southern Bohemia. For this reason one of the sites on the network is equipped with a GeoSIG AC-63 triaxial force balanced accelerometer.

**KEYWORDS:** microseismicity, nuclear power plant, southern Bohemia, local seismic network, data acquisition

# EVALUATION OF FULL SEISMIC MOMENT TENSOR FROM ISOTROPIC, CLVD AND DOUBLE-COUPLE COMPONENTS

*Petr KOLÁŘ*

*Geophysical Institute, Boční II, 141 37 Praha 4 – Spořilov*

*Corresponding author's e-mail: kolar@ig.cas.cz*

*(Received July 2006, accepted October 2006)*

## Abstract

Formulas for full seismic moment tensor composition are present, i.e. moment tensor is expressed as a function of ISO, CLVD, DC, strike, dip, rake, where ISO is amount of isotropic part, CLVD is amount of compensated linear vector dipole and DC is amount of pure double couple. Two forms of final formulas are given: i, two matrixes multiplication, ii, extension of "classical" formulas for 6 independent moment tensor elements.

**KEYWORDS:** evaluation of full seismic moment tensor, point source representation

## JIRÍ KONTA: BIBLIOGRAPHY

*Jiří KONTA*

*Professor Emeritus, Charles University, Albertov 6, 128 43 Prague 2, Czech Republic*

*Home address: Korunní 127, 130 00 Prague 3, Czech Republic*

*Corresponding author's e-mail: petrol@natur.cuni.cz*

*(Received September 2006, accepted November 2006)*