Evaluation and Optimization of Gas Assisted Gravity Drainage Process

T. Vaccharasiritham1*, S. Athichanagorn1
1Department of Mining and Petroleum Engineering, Chulalongkorn University, Thailand
* e-mail: teerawat_v@hotmail.com

ABSTRACT
Gas Assisted Gravity Drainage (GAGD) process involves injecting gas at the top of the pay zone to displace oil toward a bottom horizontal producer. The results have shown that increasing oil production and gas injection rates increase oil recovery. Additionally, using one horizontal producer located at the deepest depth together with a vertical gas injector at the most updip location yields the highest oil recovery. Relative permeability correlations provide insignificantly different oil recovery, and increasing vertical to horizontal permeability ratio gives higher cumulative oil production. Furthermore, decreasing in residual oil saturation results in higher oil recovery.

KEY WORDS: GAGD process / Gravity drainage / Dipping reservoir

REFERENCES
Stability Planning Using Reliability Techniques

Sanga Tangchawal
Geoscience Program, Mahidol University Kanchanaburi Campus
SaiYok, Kanchanburi 71150, Thailand
*Author to correspondence e-mail: sanga.tang@gmail.com

ABSTRACT
When operating construction excavation using machines, stability planning on the failures of ground materials can be calculated. The basic concept is by using the deterministic method to find the value of factor of safety. However, this technique does not concern on the variations of material properties. To improve the calculated values of failure possibility, the statistical analysis using three types of reliability models are proposed. The normal and lognormal distribution of input data are assumed to compare their assessment.

KEYWORDS: Stability Planning /Ground Failures / Reliability Techniques/Data Distribution/

REFERENCES


Case Study of Granite Rock Failure from Pahang, Malaysia by Uniaxial Compression Test, Triaxial Compression Test and Brazilian Test for Tunnel Analysis with 2D-σ Software

Eang Khy Eam¹, Syed Fuad Saiyid Hashim¹,*, Mohd Hazizan Mohd Hashim¹, Afikah Rahim¹, Yoshitaka Mitsui²

¹School of Materials and Mineral Resources Engineering, Universiti Sains Malaysia, Engineering Campus, 14300 Nibong Tebal, Penang, Malaysia
²Graduate School of Engineering, Hokkaido University, N13W8, Sapporo, 060-8628, Japan

*Corresponding author: mrsyfuad@eng.usm.my

ABSTRACT
In this paper, the tunnel is located in a central area of Peninsula Malaysia. It is used to convey raw water from the Semantan River to Selangor, Kuala Lumpur for domestic and industrial uses. The transfer tunnel is planned to be 44.6 km in length, passes through the main central mountain range formed of metamorphosed rock 3.5 km and the remaining portion in granite. The granite rock failure of tunnel was determined by uniaxial compression test, triaxial compression test and Brazilian test. From the rock failure parameters, our tunnel construction will be analyzed and designed by 2D-σ software. Analyzing tunnel process in 2D-σ is widely used method to calculate deformation, change in height and width of tunnel, stress distribution and concentration as well as rock structure interactions. Possibility of damage to the surface and/or underground structures can be estimated using powerful finite element method (FEM) of analysis [4]. The 2D-σ analysis has been conducted to assess tunnel induced settlement, stress redistribution phenomena along the tunnel excavated by Tunnel Boring Machine (TBM) or either New Austrian Tunneling Method (NATM). It might involve the comparison of tensile and compressive strengths from experiments and 2D-σ.

KEY WORDS: Brazilian Test / Finite Element Method / Granite rock failure / Triaxial Compression Test / Uniaxial Compression Test / 2D-σ software

REFERENCES


Effects of Loading Rate and Pore Pressure on Compressive Strength of Rocks.

S. Khamrat¹*, K. Fuenkajorn²
¹Graduate Student, Geomechanics Reserarch Unit, Suranaree University of Technology, Thailand
²Associate Professor, Geomechanics Reserarch Unit, Suranaree University of Technology, Thailand
*e-mail: B5100477@hotmail.com

ABSTRACT

The objective of this study is to determine the effects of pore pressures on the compressive strengths of Tak granite, Lopburi marl and Lopburi marble. Failure strengths are determined for various stress rates and confining pressures under dry and saturated conditions. A multi-axial strength criterion is developed to describe the distortional strain energy density of rock at failure as a function of the mean strain energy. The energy required to fail the rocks under dry condition is higher than that under saturated condition. The proposed strength criterion can be useful to predict the strength and deformation of rock embankments and foundations under dry and saturated conditions.

KEYWORDS: Pore pressure / Strength / Loading rate / Strain energy

REFERENCES


Effects of Stress Rate on Uniaxial Compressive Strength of Rock Salt under 0-100°C.

S. Sartkaew¹*, K. Fuenkajorn²

¹Graduate Student, Geomechanics Research Unit, Suranaree University of Technology, Thailand
²Associate Professor, Geomechanics Research Unit, Suranaree University of Technology, Thailand
*e-mail: suratwadee-s@hotmail.com

ABSTRACT

Uniaxial compression tests have been performed to assess the effects of loading rate on compressive strength and deformability of the Maha Sarakham salt under temperatures ranging from 273 to 373 Kelvin (0-100°C). The variation of the octahedral shear strength with the stress rates and temperatures can be described by logarithmic relations. The distortion strain energy criterion is proposed to describe the salt strength under varied stress rates and temperatures. The criterion can be used to determine the stability of salt around compressed-air energy storage caverns, where the loading rates and temperatures are continuously varied during air injection and retrieval periods.

KEYWORDS: Rock salt / Loading rate / Thermal effect / Strain energy

REFERENCES

Estimation of Sediment Thickness by Using Microtremor Observations at Palu City, Indonesia

Pyi Soe Thein1*, Subagyo Pramumijoyo2, Kirbani Sri Brotopuspito3, Wahyu Wilopo4, Junji Kiyono5 and Agung Setianto6
1 Geological Engineering Department, Gadjah Mada University
2 Geological Engineering Department, Gadjah Mada University
3 Physics Department, Gadjah Mada University
4 Geological Engineering Department, Gadjah Mada University
5 Graduate School of Global Environmental Studies, Kyoto University
6 Geological Engineering Department, Gadjah Mada University
*u.pyisoethein@gmail.com

ABSTRACT
In this study, we firstly estimated a ground profile of sediment thickness in Palu City, Indonesia, using microtremor observations. Sulawesi is lying at junction of three major plates, i.e.: Eurasian plate at NW, Indoaustralian plate at SSE and Pacific plate at NE of Sulawesi; and represents an extensive zone of convergence between these three plates. One of the major structures in Sulawesi is the Palu-Koro Fault, which extends NNW-SSE direction and cuts cross Sulawesi from Palu Bay southward to the North of Gulf of Bone and turn to South East connected with both Matano and Lawanopo Faults. The formation of this fault system is considered as a consequent of the collision between Banggai-Sula micro-continent and Sulawesi. Several earthquakes known along Palu-Koro Fault system such as Gimpu earthquake (1905), Kulawi earthquake (1907), Kantewu earthquake (1934), off shore Donggala earthquake (1968) which caused tsunami that destroyed 800 houses and killed 200 people at Donggala district. To prevent loss of human lives and dwellings from a devastating earthquake, we investigated the shaking characteristics of the ground in Palu. Spectral ratios for horizontal and vertical motion, H/V, from single-station microtremor records were used to identify the predominant periods of the ground vibrations. Microtremor array observations were conducted to find the ground profile of sediment thickness in Palu City. From the array observations, the central business district of Palu city corresponds to relatively soil condition with Vs 300 m/s.

KEY WORDS: Microtremor observations / soil / Palu City
REFERENCES


The Subsurface Soil Effects Study Using the Short and Long Predominant Periods From H/V Spectrum In Yogyakarta City

Z.L. Kyaw\textsuperscript{1,2*}, S. Pramumijoyo\textsuperscript{2}, S. Husein\textsuperscript{2}, T.F. Fathani\textsuperscript{3}, J. Kiyono\textsuperscript{4} and R.R. Putra\textsuperscript{5}

\textsuperscript{1,2}Geology Department, Yangon University, Myanmar
\textsuperscript{2}Geological Engineering Department, GadjahMada University, Indonesia
\textsuperscript{3}Civil and Environmental Engineering Department, GadjahMada University, Indonesia
\textsuperscript{4,5}Department of Urban Management, Kyoto University, Japan
*Corresponding email: zlkyaw.geol@gmail.com

ABSTRACT

Yogyakarta has been seriously damaged by Yogyakarta earthquake which was an Mw 6.3 event. The single observations of microtremors were densely performed at 274 sites. The predominant periods due to horizontal-vertical ratio are in the range of 0.15 to 4.00 sec. The distribution of the short and long predominant periods which reflect the information of relatively shallow and deep sedimentary structure as well as the sediment thickness. We investigated relationship between the shape of H/V spectrum for microtremor and underground structure. In the results of this study, it obviously noted that the characteristics of microtremor are dependent on the type of soil deposits.

KEYWORDS: SHALLOW AND DEEP SOIL STRUCTURE; H/V SPECTRAL RATIO; MICROTREMOR OBSERVATIONS; BOREHOLES; YOGYAKARTA CITY

REFERENCES

Congress on Earthquake Engineering, Auckland, New Zealand.


Granite Related Mineralization of Tungsten in Hoggar, Southern Algeria

R. Suzaki¹, O. Kolli², K. Mokrane², A. Boutaleb², S. Taguchi³, K. Yonezu¹ and K. Watanabe¹

¹ Department of Earth Resources Engineering, Faculty of Engineering, Kyushu University, Japan
² University of Sciences and Technology HouariBoumediene(USTHB), Algeria
³ Department of Earth System Science, Faculty of Science, Fukuoka University, Japan

*Authors to correspondence should be addressed via e-mail: suzaki-ryota@mine.kyushu-u.ac.jp

ABSTRACT

The production of hydrocarbons is still by far the leading mineral sector, accounting for the bulk of export earnings of Algeria. The Government’s mineral industry fosters a diverse but rather modest production of metals. Therefore, not many mineral investigations have conducted especially southern part of Algeria. However, the potential for base- and precious metals in the Hoggar region, southern part of Algeria, has been investigated for many years with fairly contradictory results.

With the aims to investigate Sn-W mineralization in Hoggar region, such as Tin Amzi and Hanana, this study was carried out by microscopic observation, SEM-EDS, XRF analysis and fluid inclusion study.

Host rock of these areas were granites. Magnetic susceptibility of Tin Amzi granites were around 0.2×10⁻³ SI unit, and 0.03×10⁻³ SI unit in Hanana. Both of them were Ilmenite series.

The Tin Amzi deposit is composed of wall greisenised quartz veins of main N-S strike and of vertical dip. There are a lot of trenches with quartz veins along the ridge.

Hanana is located on a hillock which was made by intrusion of granite. In this area, some mineralization stage can be seen. Granite, zinnwaldite and topaz, greisen, then quartz veins are mineralized from early stage to late stage. Mineralization temperature of those minerals decreases from early stage to late stage.

Wolframites of Tin Amzi were slightly Fe rich and mineralized in the central part of quartz vein. Sn of this area are in highly differentiated greisenized part. Fluid inclusion of this area were two-phase, and homogenization temperature were around 200~230°C. Salinity were around 7.0 wt.%NaCl equivalent.
In Hanana, content of Fe in wolframitewere clearly higher than Mn. Fluid inclusion of this area contained rich CO$_2$ and salinity were around 9.3 wt.% NaCl equivalent.

It could be considered that Ilmenite series magma, F-rich minerals and CO$_2$-rich fluid have some relationship with Sn-W mineralization.

**KEY WORDS:** Algeria /Hoggar /Geology/granite /tungsten / wolframite

**REFERENCES**


Copper-Gold Mineralization Characteristics of the Sungai Mak Deposit in Gorontalo, Northern Sulawesi, Indonesia

M.Yamamoto¹, A.Maulana¹², K.Yonezu¹, K.Watanabe¹ and A.Subehan³

¹Department of Earth Resources Engineering, Kyushu University, Japan
²Department of Geology Engineering, Faculty of Engineering, Hasanuddin University, Makassar 90245, Indonesia
³PT Gorontalo Mineral, Indonesia

* E-mail:yamamoto-masanori@mine.kyushu-u.ac.jp

ABSTRACT:

Tombulirato region in Indonesia, Sulawesi Island, Northern Grontalo is located in the convergent boundary of the Eurasian plate and the Australia plate. The survey was started in the 1970s, as a result, hydrothermal gold-silver deposit shallow low-sulfide type porphyry copper gold deposits, and hydrothermal copper gold-silver deposit shallow high sulfide type has been confirmed. Sungai Mak deposit was estimated as porphyry copper deposit, but detail research was not yet doing. In this study, object is to reveal the Mineralization characteristics of the Sungai Mak by researching boring core and observation of outcrop.

By the observation of outcrop, malachite layer that caused by second enrichment effect, and quartz vein that caused by hydrothermal activity were confirmed. The alteration minerals of intrusive rock identified by thin section observation and X-ray diffraction analysis was quartz, chlorite, illite and pyrophyllite. From observation of thin section, hornblende and plagioclase was confirmed as rock forming mineral and these show porphyritic structure. So intrusive rock was confirmed that it is porphyry. As a result of plotted SiO₂ and K₂O+Na₂O relationship in TAS diagram, intrusive rock was classified granodiorite. From the above intrusive rock was grano diorite porphyry. Ore minerals, chalcopyrite, pyrite, bornite, digenite and covellite were confirmed by microscopy and SEM-EDS analysis of polished section. From the three samples, gold mineralization were confirmed by X-ray Fluorescence Analysis. The result of plotted gold grade and copper grade, they have a positive relationship. This was correspond with characteristic of another porphyry copper deposit in Tombulirato district. By characteristic of combination of ore minerals, there are boundary of primary sulfide zone and intrusive rock in around 160 m from surface.

As a result of measurement of the gas-liquid two-phase fluid inclusions that was contained in quartz stock work(width1-3cm), salinity is 2.4-17.8%, homogenization temperature is 282-326°C(mode value 320°C).
general, there are many examples that the salinity of the fluid of the copper mineralization time is under 12wt.%, and homogenization temperature is under 320ºC in porphyry copper deposit. This was reconciling with this study.

From these result and the fact that Sulawesi is located in the convergent boundary of the Eurasian plate and the Australia plate, Sungai Mak deposit is recognized as part of porphyry copper deposit.

REFERENCES


Assessment of Geological Characteristics and Petroleum Potential of Cuu Long and Nam Con Son Basin

Tran Thi Mai Huong1*, Hoang Dinh Tien1, Nguyen Viet Ky2
1 Department of Petroleum geology, Hochiminh City University of technology, Vietnam
2 Department of Geotechnical Engineering, Hochiminh City University of technology, Vietnam

*Authors to correspondence should be addressed via e-mail: ttmaihuong@hcmut.edu.vn

ABSTRACT

Two Cuu Long and Nam Con Son located adjacent the continental shelf of South Vietnam, is located at north latitude from 60 to 110 and 1060 to 1090 30' Eastern longitude. However, the potential and the quality of oil and gas are very different. The product of Cuu Long basin primarily was oil in fractured basement had Cretaceous age, and the sediments had the third age located unconformably the fractured basement. But products of the Nam Con Son basin was condensate and gas to born from the similar sediments and fractured basement.

Why? After finding out they have some things in common, but differences factors such as tectonic nature and organic materials (OM) creative the petroleum products was very different. So we need to clarify these differences factors.

Results expressed as follows: The phase tectonic activity in the Cuu Long Basin took place early in the Oligocene period, then take a break and constantly sinking. Type OM mainly Sapropel-numic (type kerogen II). Meanwhile, the Nam Con Son basin tectonic phase takes place is complex and multi-phase, to take place very late. On the other hand OM is mainly humic (type III kerogen). These factors create conditions of different petroleum products and their distribution rules are different.

KEY WORDS: Clean coal / Earth resources / Geology / Material / Mining / Petroleum

REFERENCES


New Reserves Discovery: Deep Oligocene Syn-rift Reservoirs, Arthit Field

Waranon L.1, Supamittra D.2, Nathawut S.3, Thanawut W.4 and Jularat K.5

Department of Petroleum Development, Arthit Asset, PTT Exploration and Production Co. Ltd.

ABSTRACT

Gas in Oligocene, Formation 0 (FM0) new reserves in Arthit Field were established after the successful of Platform A. The main objective of this platform is to develop gas reservoirs in Formation 2 (FM 2): Fluvial-Deltaic, Formation 1 (FM 1): Fluvial and Upper Formation 0: Lacustrine delta. Based on the depositional system, encountered reservoirs of FM0 could be divided into 2 main units which are 1) Upper FM0 (H90-H100) and 2) Lower FM0 (BelowH100). “A new discovered reserve of FM0 is identified at hydrocarbon accumulation below H100”.

A complete of syn-rift petroleum system leads to the success of FM0 new hydrocarbon discovery. A source rock is identified as Oligocene lacustrine shale deposited in Arthit Lake. Interbedded sand-shale layers of a lacustrine deltaic created a perfect pair of reservoir-seal package and self-sourced system which directly charged/migrated in to sand reservoirs. A series of structural closures and ramp structures created by syn-rift fault system introduce an appropriate hydrocarbon accumulation trap. The uppermost section of the new pay interval is indentified at a high velocity shale package of FM0 (H100), deposited boardly over the northern part of Arthit Field. The seismic signature of this event could be explained as a good continuous seismic reflectors, high seismic amplitude value and contain high seismic frequency content. At the main reservoir unit below H100, log character and petrophysical study illustrates the first sequence of cylindrical shape which indicates the deposited bar sands interfingering with lacustrine shale during aggradational sequence. This sequence was later overlaid by the funnel-like shape log character of FM0 (H90-H100). It indicates bar sands deposited in lacustrine deltas during the progradational and retrogradational sequences. In general, top FM0 was encountered at a depth near 3000mTVD-MSL, bottom hole static temperature is over 190 ºC and a formation pressure is at 1.0-1.2 SG EMW (slightly abnormal pressure). Wonderfully, FM0 sands reservoirs are showing a very promising well results with net pay ranging from 3-26 mTVD and containing a moderate to good reservoir property with 10-21 % porosity. However, to quantify or evaluate the FM0 reservoir potential, the production performance is one of the significant information.

KEY WORDS: Oligocene / Gas production / Petroleum
Applications Programming Language Autolisp in Autocad Software for Automatic Calculation and Establishment of Boring Log and Geological Section

Thai Ba Ngoc, Tran Van Xuan, Nguyen Xuan Kha
Ho Chi Minh University of Technology

ABSTRACT

Currently, most of the calculations and establishment of Boring Log and Geological Section in the field of geology are performed on excel, corel or autocad software. However, this work is done by hand, very difficult, takes more time. The use of the AutoLISP programming language in Autocad will allow automation of the calculation and construction of Boring Log, geological cross-sections. MCDC program was created based on the AutoLISP programming language helps dramatically reduce the execution time of the with minimum errors.

Usually based on the data of the project, geotechnical engineers calculated N values of SPT (Standard penetration test), elevation borehole, thickness, determine the boundary layer and sketch Borehole log and Geological section before then using Autocad to perform manually with the command line available. With the help of MCDC program, the work will be done automatically when the user loads sufficient data for the program.

The support design drawings MCDC is written in the AutoLISP programming language effectively shorten the time to complete a geological longitudinal section drawings and drawing cylinder bores. The possibility that the program can be made:
- The cumulative distance and drawn along natural Monitoring, pile full name, odd distance
- Calculate and draw scalebar stand
- The high level borehole and borehole layout, record the serial number of holes, insert symbols holes (or pits)
- Support for background fill geological layers
- Drawing is available annotations, text annotations
- Insert frame available name
- Insert acres of state symbols
- Draw drawing Boring Log with the principal and expressed SPT chart
- Draw geological longitudinal section.

KEYWORDS: AutoLISP, Boring Log, geological cross-sections, diagrams SPT
REFERENCES

Lightweight Aggregate Concrete Blended with Rice Husk Ash and Para Rubber Wood Fly Ash

A. Hawa 1, D. Tonnayopas 2*

1 Department of Civil Engineering, Prince of Songkla University, Thailand
2 Department of Mining and Materials Engineering, Prince of Songkla University, Thailand
* e-mail: danupon.t@psu.ac.th

ABSTRACT
This experimental program was undertaken binary and ternary combinations of rice husk ash (RHA) and Para rubber wood fly ash (PRWFA) were investigated for their effects on the compressive strength of pumice aggregate concrete (PAC). Binary and ternary of mixtures were partial Portland cement (PC) replacement in different batches from 0-60wt.% cured in water for 7 and 28 days. The properties of the PAC regarded bulk density, water absorption, drying shrinkage, compressive strength, and also Scanning Electron Microscope (SEM) analysis of interfacial transition zone between pumice aggregate and paste. The results showed that the compressive strength decreased significantly with increasing PRWFA and RHA contents. Binary and ternary can be possible to produce the PAC with 28 days compressive strength of about 9 to 22 MPa and bulk density of about 1,610 to 1,730 kg/m3. However, with 7 and 28 days curing, all of the binary and ternary mixtures yielded PAC with a compressive strength higher than that of uncured sample. The 28-day cured binary combination of 10-20% RHA and 90-80% PC showed the highest compressive strength. It is possible to use PRWFA content at 10% incorporating the 10% RHA, and 80% PC displayed strength approach to the control sample.

KEYWORDS: Lightweight concrete / Rice husk ash / Para rubber wood fly ash / Pumice aggregate

REFERENCES


Green Building Bricks Made with Clays and Sugar Cane Bagasse Ash

D. Tonnayopas*
Department of Mining and Materials Engineering, Prince of Songkla University, Thailand
*e-mail: danupon.t@psu.ac.th

ABSTRACT
Characterization in behavior of the clay material used in construction clay brick industry due to additions of sugar cane bagasse ash (SCBA) was investigated. Mixtures of clayey soil and SCBA in proportions of 10-50wt.% were hydraulic uniaxially pressed and sintered at optimized temperature of 1,050°C. Experimental results of partial replacement of the SCBA specimens were carried out on chemical and mineralogical analysis (X-ray fluorescence and X-ray diffraction), thermal analysis (differential thermal analysis, TG), bulk density, water absorption and compressive strength. It is displayed that the SCBA can be directly affected on the properties of the sintered clay brick products. It influenced as a flux agent, becoming the energy efficiency of the lightweight clay brick and environmentally friendly brick.

KEYWORDS: Green clay brick / Industrial waste / Recycling materials / Sugar cane bagasse ash

REFERENCES


[23] ASTM D698-00a Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3))


Development of Zn Anode for Zinc-Air Batteries
Ahmad Azmin Mohamad

School of Materials and Mineral Resources Engineering,
Universiti Sains Malaysia, 14300 Nibong Tebal, Penang, Malaysia.
Corresponding author. Tel: 604-599 6118; Fax: 604-5941011
E-mail address: azmin@eng.usm.my

ABSTRACT
Zinc (Zn) anodes from plate, deposition and porous were used to fabricate Zn-air batteries. The Zn-air batteries properties were characterized a discharge rate at constant current. The discharge properties of the batteries were plotted using voltage-specific discharge capacity. Voltages of all batteries are in range of 1.0-1.3 V. Meanwhile the discharge capacities are in the range of 450-600 mA h g\(^{-1}\) depending on discharge rate.

KEYWORDS: Batteries; Zinc-air; Anode

REFERENCES
The Effect of Drying Temperature on Mechanical Properties of the Natural Rubber Latex Products Filled with Kaolin Modified Alkanolamide

Hamidah Harahap*, Indra Surya, Hanafi Ismail, Erick Kamil, Emelya Khoesoema, Elmer Surya
Department of Chemical Engineering, Universitas Sumatera Utara, Indonesia
Jalan Almamater, Kampus USU Medan 20155, North Sumatra, Indonesia
*Authors to correspondence should be addressed via e-mail: hamidah_usu@yahoo.com

ABSTRACT
Kaolin is a clay mineral generally used as filler. Kaolin is white, with particle size of 300 mesh. It can be used as natural rubber latex filler in a dispersion system. It consists of water, kaolin and alkanolamide. This dispersion system was mixed with natural rubber latex and curative agent with composition of 10 pphr (part per hundred rubber). This latex compound was pre-vulcanized at 68°C and dried at temperature of 100°C and 120°C for 30 minutes by dry dipping method. The mechanical properties of product were then investigated using Fourier transform infrared spectroscopy (FTIR) and analyzed by Scanning Electron Microscope (SEM).

KEY WORDS: Natural Rubber Latex / Kaolin / Alkanolamide / Dipping Method / Filler

REFERENCES


Characteristic Mechanic of Polyester Composite Particle Board with Filler Particle of Areca Nut Fiber

Maulida, Eka Roy Jayanto, Hendry Simanjuntak,
Departemen of chemical engineering, engineering faculty, University of Sumatera Utara,
Jl Almamater Campus USU Medan 20155, Indonesia
e-mail : maulida70@gmail.com eka_par@yahoo.co.id and hendryxjun@yahoo.co.id

ABSTRACT

Areca nut fiber is one of the natural fiber alternative material in composite making scientifically and its exploiting still developed. Fiber propose marriage to now used many in furniture industries and crafting of household and also traditional drug materials because besides is easy to got is, cheap, can lessen environmental pollution (composite biodegradability) so that this can overcome environmental problems, and also do not endanger health. At this research, researchers are looking for the ability of this particle board toward to test in the form of mechanical properties such as modulus of rupture, screw holding capacity, and FTIR. The variable is used comparison among areca fiber and polyester that is 1:1 and 1:2 of volume percent, and also areca fiber particle size measure that is 50 mesh and 100 mesh. The characteristic of this Areca nut fiber particles toward to test of which have been done are appropriate to Standard Nasional Indonesia (SNI) which have been specified. The result of this research conclude this Areca nut fiber is suited for as filler in composite particle board making with matrix of polyester.

KEY WORDS: Areca nut fiber/ Polyester/ Particle Board/ Composite.

REFERENCES

http://www.wordpress.com


Paper ID 65

Tensile and Flexural Properties of Unsaturated Polyester (UPR) Composites Filled with Empty Fruit Bunch Palm Oil (EFBPO) and Cellulose

Halimatuddahliana, Elmer Surya*, Michael
Department of Chemical Engineering, Universitas Sumatera Utara, Indonesia
Jalan Almamater, Kampus USU Medan 20155, North Sumatra, Indonesia
*Authors to correspondence should be addressed via e-mail: elmer.surya@gmail.com

ABSTRACT
The tensile and flexural properties of unsaturated polyester (UPR) composites filled with empty fruit bunch palm oil (EFBPO) and cellulose were investigated. The composites were made by hand-lay up method by mixing UPR and fillers with the ratio of UPR/fillers viz. 95/5, 90/10, 85/15, and 80/20 to obtain the best content of fillers in the composites. The parameters which were carried out on the prepared samples were tensile strength and flexural strength. The results have shown the value of tensile strength and flexural strength were both still under the value of pure UPR. It was found that as the EFBPO contents in UPR were increased the elongation at break and flexural strength of the composites increased. The highest elongation at break was occured at 80/20 UPR/EFBPO composite. However, the addition of cellulose in UPR has decreased the properties of composites.

KEY WORDS: Unsaturated polyester / EFBPO / Cellulose / Hand-Lay Up / Tensile strength/ Flexural strength

REFERENCES


Significance of The mineralogical Properties of Phyllosilicate as An Indicator in the Exploration of Ore Deposits

T. Yoneda¹ and H. Mokko¹

¹Division of Sustainable Resources Engineering, Faculty of Engineering, Hokkaido University, Japan
e-mail: yonet@eng.hokudai.ac.jp

ABSTRACT

The mineralogical properties of phyllosilicate, such as mineral association, particle size, mineral chemistry, etc. show highly diverse and systematic variations closely related to their occurrences in hydrothermal systems. The mineral chemistry and particle size of hydrothermal chlorites were examined to explore their applicability as indicators during ore prospecting. A comparison of fluid inclusion thermometry indicates that the two thermodynamic chlorite geothermometers are usable for a wide compositional range of trioctahedral chlorites from hydrothermal systems, and that the chlorite solid solution model including thermodynamic properties employed in the two thermometers may only have small differences in the temperature estimation. The particle size properties of hydrothermal chlorites can be related to their crystal-growth mechanisms and to the environmental conditions of mineral formations in the hydrothermal systems as well as those of illites. Further detailed and integrative studies on the mineral properties of phyllosilicate in hydrothermal systems are expected to develop useful indicators in the exploration of ore deposits.

KEY WORDS: Phyllosilicate / Mineralogical properties / Hydrothermal systems / Chlorite compositions / Particle size / Ore prospecting

REFERENCES


Effect of Specimen Size on Mode I Fracture Toughness by SCB Test

Kojiro Ueno1*, Takahiro Funatsu2, Hideki Shimada1, Takashi Sasaoka1, Kikuo Matsui1

1 Department of Earth Resources Engineering, Kyushu University, Fukuoka 819-0395, Japan
2 Institute of Geo-Resources and Environment, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba 305-8567, Japan

*Authors to correspondence should be addressed via e-mail: ueno12r@mine.kyushu-u.ac.jp

ABSTRACT:
The semi-circular bend (SCB) specimen was suggested in 1984 for testing mode I fracture toughness of rock. Recently, SCB specimen was extended and improved for many other applications by various researchers due to ease in handling though short rod (SR) specimen is recommended method. However, there are still rooms to consider for determining the fracture toughness of rock exactly by SCB specimen. This paper discusses the application of the SCB specimen for determining the fracture toughness of rock by comparison between the result of SCB specimen and SR specimen, and size effect using the SCB specimen.

KEY WORDS: Fracture toughness / SCB specimen / SR specimen / Size effect

REFERENCES
determining Mode I fracture toughness using cracked chevron-notched
Brazilian dic (CCNBD) specimens, R.J. Fowell (co-ordinator), Int. J. Rock
mech and Min. Sci., 32 pp57-64.

Potential of White Marble Resources in Luc Yen District, Yen Bai Province of Vietnam and Orientation For Development

NGUYEN Thi Thuc Anh

PhD. In Geology,
Head of Department of Mineral Resources Management
Faculty of Geology, Hanoi University of Natural Resources and Environment,
Vice Chairwoman of Luc Yen White Marble Association.

ABSTRACT

White marble resource (known as white limestone) in Vietnam in general and in Luc Yen district, Yen Bai province in particular is one of the strategic minerals in Vietnam. Since 1999, the white marble in Luc Yen has been interested by researchers and investors because of its value in use and highly economic efficiency, especially in the field of block, slab marble construction production, calcium carbonate powder and high-end jewelry. White limestone range in Luc Yen belong to An Phu (NP - ε1ap) formation that consists of altered limestone, siliceous limestone, its thickness is about 450-500m, 12-14 km width, nearly 20 km length in NW - SE. The marble mineral are mostly in white marble, white gray, white gray color. Mineral components mainly are calcite from 97% to 100%. Until now, many mining and processing investors in Luc Yen has been successful applied appropriate scientific, technologies to put white marble products not only meet the domestic market but also to reach the market international.

REFERENCES

Design the Blast in Low Benches and some Practical Applications in Vietnam

Pham Van Hoa\textsuperscript{1}\textsuperscript{*}, C. Drebenstedt\textsuperscript{2}, Le Van Quyen\textsuperscript{1}, Nguyen Dinh An\textsuperscript{1}
\textsuperscript{1}Department of Surface Mining, Hanoi University of Mining and Geology, Vietnam
\textsuperscript{2}Institute of Mining and Special Civil Engineering, TU Bergakademie Freiberg, Germany

*Authors to correspondence should be addressed via e-mail: phamvanhoa.humg@gmail.com

ABSTRACT

The blasts in low benches appear more often at the mining and especiall at the construction sites in Vietnam such as: blasting for road construction, trench blasting, ground levelling; blasting for digging foundation of the hydraulic power plant,... The paper presents the influence of bench height / charge length on the value of burden based on the experimental study of many series of full scale single hole test blasts. The results shown that with the ratio of bench height to charge diameter $H/d < 60$ or the ratio of charge length to charge diameter $l/d < 40$, the blasts are classified into low bench blasting and the values of burden in these cases should be decreased to get better blasting results.

KEY WORDS: Blasting of rock /Burden /Low bench blasting/Charge length/ Bench height

REFERENCES

[7] Belin, B.A. and D.T. Thang, Experimental study on the effect of the length of the underwater bottom charge on the transverse dimensions of blasted...


An Overview of Titanium Placer in Middle of Vietnam

1 Le Qui Thao, Nguyen Hoang, Pham Van Viet, Tran Dinh Bao
1Department of Surface mining, Hanoi University of Mining and Geology, VietNam
* E-mail: thaoquile2008@gmail.com

ABSTRACT
Vietnam has considerable potential of placer and under-water minerals, need exploiting to serve national economy. However, mining technologies have been using not consistent with mining condition, not high effective.

The paper introduces potential of titanium placers in Middle of Viet Nam, current mining status and proposes some suitable mining technologies for sustainable development of the future titanium industry of Vietnam.

KEY WORDS: Placer mining/backhoe hydraulic excavator/dipper dredger/potential titanium of Vietnam

REFERENCES