

PROCEEDINGS OF THE 3rd INTERNATIONAL CONFERENCE
ON ADVANCES IN MINING AND TUNNELING
21-22 OCTOBER 2014, VUNG TAU, VIET NAM

ADVANCES IN MINING AND TUNNELING

PUBLISHING HOUSE FOR SCIENCE AND TECHNOLOGY
HA NOI, VIET NAM - 2014

ISBN: 978-604-913-248-3



9 786049 132483

Publishing House for Science and Technology
18 Hoang Quoc Viet Road, Cau Giay, Ha Noi, Viet Nam
Tel: 84-4-22149041; Fax: 84-4-37564931
Email: nxb@vap.ac.vn; <http://www.vap.ac.vn>

**PROCEEDINGS OF THE 3rd INTERNATIONAL CONFERENCE
ON ADVANCES IN MINING AND TUNNELING**

Editor in Chief: A/Prof. Dr. Bui Xuan Nam
Assistant Editor: MSc Nguyen Quoc Long

Responsibility for Publication: Prof. Dr. Sc Nguyen Khoa Son
Technical Edited: Hung Anh
Registered Ref. No: 1888-2014/CXB/03-29/KHTNCN
Dated: 22 September 2014

Copyright © 2014 Hanoi University of Mining and Geology, Viet Nam

All rights reserved. No part of this publication or the information contained herein may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, by photocopying, recording or otherwise, without written prior permission from the publisher.

Although all care is taken to ensure the integrity and quality of this publication and the information herein, no responsibility is assumed by the publishers nor the author for any damage to property or person as a result of operation or use of this publication and/or the information contained herein.

Published by: Publishing House for Science and Technology, Ha Noi, Viet Nam
ISBN: 978-604-913-248-3
Printed in Viet Nam

ORGANIZATION

CHAIRMAN

A/Prof. Dr. Le Hai An

ORGANIZING COMMITTEE

A/Prof. Dr. Le Hai An

A/Prof. Dr. Tran Thanh Hai

A/Prof. Dr. Bui Xuan Nam

A/Prof. Dr. Nguyen Quang Luat

A/Prof. Dr. Dinh Van Thang

A/Prof. Dr. Nguyen Ngoc Thanh

A/Prof. Dr. Nguyen Viet Ky

Prof. Dr. Carsten Drebenstedt

A/Prof. Dr. David Laurence

Prof. Dr. Jürgen Kretschmann

Prof. Dr. Sc. V. A. Belin

Prof. Dr. Sc. Viktor Atrushkevich

Prof. Dr. Sc. Vladimir Litvinenco

Prof. Dr. Vladislav Kecojevic

Prof. Dr. Kyuro Sasaki

Prof. Dr. Tran Tam

Prof. Dr. Toshifumi Igarashi

A/Prof. Dr. Pinyo Meechumna

Dr. Chairoj Rattanakawin

Dr. Manoon Masniyom

Prof. Dr. Vo Trong Hung

Dr. Nhu Thi Kim Dung

A/Prof. Dr. Nguyen Quang Minh

M.Sc. Pham Thi Thu Thuy

SCIENTIFIC COMMITTEE

A/Prof. Dr. Bui Xuan Nam
A/Prof. Dr. Nguyen Quang Luat
A/Prof. Dr. Pham Quy Nhan
Dr. Bui Trong Vinh
Prof. Dr. Vo Trong Hung
Prof. Dr. Vo Chi My
A/Prof. Dr. Nguyen Quang Minh
A/Prof. Dr. Nguyen Duc Khoat
Dr. Nguyen Thi Thuc Anh
Dr. Nguyen Thi Hoai Nga
Dr. Nguyen Thac Khanh
Dr. Bui Hoang Bac
Dr. Pham Van Hoa
Dr. Vu Dinh Hieu
Dr. Nhu Thi Kim Dung
Dr. Nguyen Hoang Son
Dr. Nguyen Ngoc Phu
A/Prof. Dr. Dang Vu Chi
A/Prof. Dr. Phan Quang Van
Dr. Nguyen Hoang Nam
Dr. Do Ngoc Anh
Dr. Nguyen Trong Dung
Dr. Nguyen Van Manh
Dr. Dang Trung Thanh
M.Sc. Nguyen Quoc Long
M.Sc. Nguyen Hoang

SECRETARIATS

Dr. Nhu Thi Kim Dung
Dr. Nguyen Thi Hoai Nga
Dr. Nguyen Thi Thuc Anh
Dr. Bui Trong Vinh

CONTENTS

No		Page
	PREFACE	1
NATURAL RESOURCES AND MINE GEOLOGY		
1	NEURAL NETWORK APPROACH FOR MIOCENE CARBONATE PREDICTION IN NAM CON SON BASIN LE Hai An	5
2	APPLICATION OF AHP WITH GIS FOR PREDICTIVE COPPER POTENTIAL MAPPING: A CASE STUDY IN LUNG PO - HOP THANH AREA, LAO CAI PROVINCE, VIET NAM BUI Hoang Bac, NGUYEN Tien Dung, PHAN Viet Son, DO Manh An, KHUONG The Hung	9
3	CHARACTERISTICS AND POTENTIAL OF RARE-EARTH ORE AT NORTH NAM XE DEPOSIT, LAI CHAU PROVINCE, VIET NAM NGUYEN Tien Dung, BUI Hoang Bac	14
4	THE CHALLENGE TO DISCOVER DEEP MINERAL DEPOSITS IN VIETNAM TO INCREASE THE COUNTRY'S MINERAL INVENTORY NGUYEN Thi Thuc Anh, VU Van Luong, Howell WILLIAM JS	20
5	APPLICATION OF REMOTE SENSING TECHNIQUE TO DETECT AND MAP THE IRON OXIDE, CLAY AND FERROUS MINERALS IN THAI NGUYEN PROVINCE, VIET NAM TRINH Le Hung, VUONG Trong Kha, BUI Thi Thanh Lan	25
6	OPTIMIZATION OF LIMESTONE AND CLAY EXTRACTION AND QUALITY CONTROL BY USING BLOCK MODELS-QSO EXPERT AND QUARRY-MASTER FOR MINES OF HON CHONG CEMENT PLANT - HOLCIM (VIETNAM) LTD NGUYEN Van Huong	30
7	QUALITY AND RESERVES OF THE YEN THAI GRAPHITE DEPOSIT, YEN BAI PROVINCE LUONG Quang Khang, BUI Hoang Bac	42
8	DETERMINATION OF OPTIMAL EXPLORATION DRILLHOLE SPACING OF A COAL DEPOSIT BY CONDITIONAL SIMULATION METHOD Pornprom NIMWATTANAKUL, Panlop HUTTAGOSOL	47
9	CHALLENGES TO THE USE OF THERMO-ACTIVE GEOSTRUCTURES IN VIET NAM NGUYEN Van Tri, TANG Anh Minh, PEREIRA Jean Michel and YAVARI Neda	52
10	USING LERCHS & GROSSMANN 2D ALGORITHM TO DESIGN ULTIMATE PIT LIMITS OF SIN QUYEN COPPER DEPOSIT VU Dinh Trong, TRAN Dinh Bao	60
11	THE FEATURE OF SPONTANEOUS COMBUSTION OF ANTHRACITE COAL IN VIETNAM COAL MINE LE Trung Tuyen, NHU Viet Tuan, NGUYEN Tuan Anh, Kotaro OHGA, Takehiro ISEI	65
12	GLOBAL RARE EARTH ELEMENTS DEMAND AND POTENTIAL RARE EARTH MINING IN VIETNAM PHAN Quang Van, NGUYEN Phuong, DO Van Nhuan, NGUYEN Truong Giang, TRINH Dinh Huan	69

MINING TECHNOLOGY AND TECHNIQUE

13	ANALAYZING AND EVALUATING THE RESEARCH RESULT OF EXPERIMENTAL BLASTS AT NUI BEO SURFACE COAL MINE TO REDUCE GROUND VIBRATION AND AIR BLAST NEAR RESIDENTIAL AREA NGUYEN Dinh An, TRAN Quang Hieu, DO Ngoc Hoan, TRAN Dinh Bao, BELIN Vladimir Arnoldovich	79
14	PROCESSING OF COAL IN TECHNOLOGICAL SYSTEMS OF MINING ENTERPRISES Atrushkevich V.A. , Atrushkevich A.V.	83
15	ANALYSIS OF VEIN-TYPE GRAPHITE MINING METHODS IN SRILANKA PGR Dharmaratne, PVA Hemalali, MC Hettiwatte	86
16	CORNER GAS ACCUMULATION CONTROL TECHNOLOGY OF FULLY MECHANIZED COAL FACE DAO Viet Doan, ZHANG Xiao-lei, ZHAO Hong-chao, LI Gen-sheng, GUI Ding- Yang, TRAN Xuan Huy	89
17	APPLICATION OF GOLDSIM SIMULATION FOR MINE WATER BALANCE AND WASTE MANAGEMENT MODELING LE Thi Minh Hanh, NGUYEN Tam Tinh, BUI Xuan Nam, PHAM Van Hoa, NGUYEN Hoang	92
18	PREDICTION AND MINIMISATION OF VIBRATIONS ON STRUCTURES DURING PRODUCTION BLASTS IN A SURFACE COAL MINE – A CASE STUDY PHAM Van Hoa, NGUYEN Sy Hiep, LE Van Quyen, TRAN Dinh Bao, LE Qui Thao	98
19	DETERMINATION OF SHOVEL - TRUCK PRODUCTIVITIES IN OPEN - PIT MINES NGUYEN Hoang, DOAN Trong Luat, LE Qui Thao, DO Ngoc Hoan, PHAM Van Viet	103
20	METHODS USED FOR IMPROVING STABILIZATION AND PREDICTING ARD AREA FOR COAL MINE WASTE DUMPS IN VIET NAM LE Thi Minh Hanh, NGUYEN Tam Tinh, BUI Xuan Nam, LE Thi Thu Hoa, VU Dinh Hieu	109
21	EFFECTS OF CLIMATIC CONDITIONS ON AIR BLAST OVERPRESSURE WHEN BLASTING NEAR RESIDENTS AREA AT SURFACE COAL MINES IN QUANG NINH TRAN Quang Hieu, NGUYEN Dinh An, PHAM Van Viet, TA Minh Duc, BELIN Vladimir Arnoldovich	116
22	STUDY ON THE PROPER BACKFILL MATERIALS IN COAL MINING USING BACKFILL TECHNOLOGY AT CANH NAM AREA OF MAO KHE COAL MINE VU Thanh Lam, NGUYEN Anh Tuan, DAO Hong Quang, DUONG Duc Hai	120
23	RESEARCH FOR PREDICTING LOST ZONES AND FIGHTING LOST CIRCULATION IN THE FRACTURED BASEMENT OF WHITE TIGER FIELD HOANG Hong Linh	127
24	RESEARCH ON SELECTIVE MINING TECHNOLOGY BY HYDRAULIC BACKHOE EXCAVATORS FOR SURFACE COAL MINES IN QUANG NINH,VIET NAM BUI Xuan Nam	135
25	METHODS FOR DETERMINING OF SAFETY FINAL LIMITS OF SAND MINING ON TIEN RIVER NGUYEN Xuan Quang, LUU Van Tam	144

26	RESEARCH ON SELECTION OF THE EXCAVATOR-AUTOMOBILE COMBINATION FOR OPEN PIT IRON ORE MINES IN WEAK GROUND CONDITION IN VIETNAM LUU Van Thuc, NGUYEN Van Duc	147
27	STUDY ON THE THICK AND HARD ROOF CONTROL METHOD IN THE LONGWALL OF QUANG HANH COAL MINE IN QUANG NINH PROVINCE VU Trung Tien, DO Anh Son, NGUYEN Van Quang	153
28	USING DREDGER FOR MINING TITANIUM PLACER IN RED SAND STRATA IN NINH THUAN AND BINH THUAN PROVINCES OF VIET NAM LE Qui Thao, VU Dinh Hieu, NGUYEN Hoang, NGUYEN Xuan Quang	158
29	DOMESTIC PRODUCTION OF UNDERGROUND GAS MONITORING SYSTEM TO REPLACE WITH IMPORTED SYSTEM FOR VIET NAM COAL MINES LUU Van Thuc, LE Van Hai, PHAM Van Hieu, NGUYEN Manh Cuong	165
30	STUDY ON THE STRESS DISTRIBUTION AHEAD OF FACE WHEN THE RATIO OF CUTTING HEIGHT TO CAVING HEIGHT VARIES IN THE EXTRACTION OF EXTRA-THICK SEAM BY FULLY MECHANIZED TOP COAL CAVING TECHNOLOGY BUI Manh Tung, LIU Chang-you, LE Tien Dung, GUO Wei-bin	169
MINERAL PROCESSING		
31	STUDY ON CONCENTRATING BEACH SAND FROM SOUTHERN HAM THUAN, BINH THUAN PROVINCE, VIET NAM PHAM Huu Giang, NHU Thi Kim Dung	179
32	REAGENTS IN SODIUM FELDSPAR FLOTATION Wilasluk JUMPA, Chairaj RATTANAKAWIN	185
33	MODELING OF FLOW RATE OF MINERALS WITH VARYING SILO HALF ANGLES AND ORIFICE DIAMETERS Kankanamge LUM, Rohitha LPS, Dharmaratne PGR	190
34	TRIAL RESULTS OF LOCAL MADE FLOTATION REAGENTS FOR FLOTATION OF FINE COAL SLURRY AT HON GAI COAL WASHING PLANT PHAM Van Luan, NGUYEN Ngoc Phu	194
35	EFFECT OF PINE OIL AND KEROSENE ON SEPARATION EFFICIENCY OF FINE COAL SIZE RANGE 0.1 - 3MM IN FLUIDIZED BED SEPARATOR TYPE RC PHAM Van Luan, NGUYEN Hoang Son, NGUYEN Ngoc Phu	197
36	EFFECTS OF WATER AND AIR PULSATION ON THE SEPARATION PERFORMANCE OF FINE COAL OF SIZE FRACTION 0.1 - 3 MM IN FLUIDIZED BED SEPARATOR NGUYEN Ngoc Phu, PHAM Van Luan, NGUYEN Hoang Son	200
37	A LEACHING OF GOLD FLOTATION CONCENTRATE FROM MINH LUONG MINE, LAO CAI PROVINCE IN ALKALINE THIOUREA SOLUTION NGUYEN Hoang Son	204
38	RESEARCH INTO TECHNOLOGICAL REGIME OF COAL SIZE FRACTION OF 0.1 - 3MM WASHING BY FLUIDIZED BED SEPARATOR NGUYEN Hoang Son, PHAM Van Luan, NGUYEN Ngoc Phu	208
39	REAGENTS IN PYRITE DEPRESSION FOR COPPER PORPHYRY ORES FLOTATION Attapol SAYKAMTA, Chairaj RATTANAKAWIN	213
40	BISMUTH EXTRACTION FROM NUI PHAO BISMUTH FLOTATION CONCENTRATE	218

	TRAN Trung Toi, NHU Thi Kim Dung, DINH Pham Thai, DINH Tien Thinh	
41	RECOVERY ENHANCEMENT OF SRI LANKAN BOGALA GRAPHITE AND PRODUCE 99+% PURITY GRAPHITE BY FLOTATION AND LEACHING PROCESS Vithanage SL, Rohitha LPS, Balasooriaya NWM, Pitawala HMTGA, Dissanayaka DMDOK	221
TUNNELLING AND GEOTECHNICAL APPLICATIONS		
42	GROUND DISPLACEMENTS DURING THE EXCAVATION OF TWIN TUNNELS DO Ngoc Anh, DIAS Daniel, ORESTE Pierpaolo, DJERAN-MAIGRE Irini, BUI Quang Anh	227
43	DEFORMATION MECHANISM AND SUPPORTING TECHNOLOGY OF SURROUNDING ROCK FOR LARGE CROSS SECTION OPEN-OFF CUT UNDER COMPOUND ROOF ZHAO Hong-chao, LIU Hong-lin, DAO Viet Doan, TRAN Xuan Huy	235
44	SOME STUDY RESULTS FOR PROTECTING ENVIRONMENT IN TUNNELING AND MINING VO Trong Hung	244
45	DETERMINATION OF STRESS AND DISPLACEMENT AROUND SHALLOW TUNNELS USING TOP HEADING AND BENCHING EXCAVATION METHOD BY PHASE2 SOFTWARE TRAN Tuan Minh, NGUYEN Duyen Phong, NGUYEN Tai Tien	247
46	ADVANCEMENT SIMULATION OF MICROTUNNEL BORING MACHINES DANG Trung Thanh	253
47	A NEW METHOD FOR PREDICTING FRACTURE LOCATIONS AT NEXT TUNNEL EXCAVATION FACE FOR SUBPARALLEL FRACTURES TO TUNNEL AXIS PHI Truong Thanh, Sang Gi HWANG, NGUYEN Quoc Phi	260
48	MULTI - METHOD SIMULATION OF THE CONSTRUCTION PROCESS IN MICROTUNNEL BORING MACHINES DANG Trung Thanh, LE Luong Hung, LE Trung Kien	265
49	APPLICATION OF COMPUTING IN DESIGN AND CONSTRUCTION OF TUNNEL LUU Anh Tuan, DINH Cong Hoa, VO Ngoc Dung, HOANG Thi Thuy	272
50	NEW IMAGE PROCESSING SOFTWARE FOR ROCK SIZE DISTRIBUTION USING GRANULOMETRY METHOD Kanin CHUAIYEWYA, Pirat JAROONPATTANAPONG	275
51	NUMERICAL SIMULATION OF ANISOTROPIC DUCTILE DAMAGE NGUYEN Trong Dung	280
52	PREDICTION OF TIME AND VOLUME OF ROCK FAILURE BY SLOPE METHOD Yoshiaki FUJII, Mufundirwa AZANIA, Jun-ichi KODAMA and Daisuke FUKUDA	285
53	3D NUMERICAL SIMULATION FOR DIRECT SHEAR TEST OF ROCK JOINT SURFACE ROUGHNESS NGUYEN Van Manh, KONIETZKY Heinz	290
54	VERIFICATION OF LOAD TRANSFER MEASURED FROM SMART TENDON EMBEDDED GROUND ANCHOR BY NUMERICAL ANALYSIS DO Manh Tan, Hyun - Jung SUNG, Gui - Hyun PARK, Young - Sang KIM	295

55	FIELD DATABASE SYSTEM FOR MANAGING DATA AND ANALYZING SLOPE STABILITY PHI Truong Thanh, NGUYEN Quoc Phi, NGUYEN Dinh Tuan	306
56	PREDICTION OF THE MACROSCOPIC DIFFUSIVITY OF CONCRETE BY USING LATTICE MODEL PHAM Duc Tho, NGUYEN Trong Dung	309
MINING AND CIVIL SURVEYING		
57	PRELIMINARY STUDIES ON THE STABILITY OF NA HANG HYDROPOWER DAM USING ALOS/PALSAR INTERFEROMETRY NGUYEN Kim Anh, LIOU Yuei-An, NGUYEN Thanh Hoan, VO Chi My, NGUYEN Ba Duy	315
58	IMPROVING THE ACCURACY OF ORIENTATION OF TUNNEL DRIVING IN DEEP VERTICAL SHAFTS AT HA LAM COAL MINE LE Van Canh, NGUYEN Viet Nghia, NGUYEN Xuan Thuy	323
59	PROCESSING THE OBSERVATION DATA TO DETERMINE THE MOVEMENT PARAMETERS AND BUILDING NON-SCALE CURVE FORM FOR MONG DUONG COAL MINE PHAM Van Chung, LE Van Canh, LE Thi Thu Ha	328
60	MONITORING THE DEFORMATION OF SURFACE USING GNSS MEASUREMENT AND ADJUSTMENT DIFFERENCES OF GNSS BASELINES NGUYEN Viet Ha, LE Duc Tinh	331
61	APPLICATION OF GEOINFORMATICS FOR BUILDING WATER SURFACE DATABASE ON MINING AREA NGUYEN Thi Le Hang, PHAM Thi Lan, NGUYEN Thi Thu Huong	336
62	APPLICATION OF CONTINUOUSLY OPERATING REFERENCE STATION (CORS) TO DETERMINE SURFACE DISPLACEMENT AND DEFORMATION CAUSED BY IMPACT OF MINING PROCESS IN QUANG NINH COAL BASIN PHAM Cong Khai	339
63	STUDYING AND BUILDING ENVIRONMENTAL DATABASE BASED ON GIS FOR ASSESSMENT THE MINE POLLUTION: A CASE STUDY IN HON GAI MINES AREA (VIET NAM) PHAM Cong Khai, TRAN Xuan Truong	345
64	IMPROVING SUBSIDENCE PREDICTION BASED ON BALS' FORMULA NGUYEN Quoc Long, NGUYEN Dinh Be, VU Tien Quang	353
65	APPLICABILITY OF ARTIFICIAL NEURAL NETWORKS ON SURFACE SUBSIDENCE PREDICTION DUE TO UNDERGROUND MINING VO Chi My, NGUYEN Tri Thanh, NGUYEN Quoc Long, BUI Khac Luyen	357
66	IMPROVING THE QUALITY OF GEOSPATIAL DATA FOR MORE EFFECTIVE MINERAL RESOURCE MANAGEMENT VO Chi My, NGUYEN Kim Anh, NGUYEN Thi Thuy Hang	363
67	SURVEYING OF TECHNOGENIC MOVEMENTS IN OPEN-PIT MINES IN VIET NAM NGUYEN Viet Nghia, Jadwiga MACIASZEK	367
68	APPLICABILITY OF GPS TECHNOLOGY FOR ENGINEERING STRUCTURES MOVEMENT MONITORING ON UNDERGROUND COAL MINE	373

	NGUYEN Quang Phuc, NGUYEN Viet Ha, HOANG Thi Minh Huong	
69	APPLICATION OF THE RETRIEVAL ALGORITHM IN OPTIMAL DESIGN OF DEFORMATION MONITORING NETWORKS LE Duc Tinh, NGUYEN Viet Ha	379
70	DETERMINATION OF THE DISPLACEMENT PARAMETERS FOR QUANG NINH COAL BASIN KIEU Kim Truc	383
71	A COMPARISON OF FOUR METHODS FOR SURFACE SOIL MOISTURE ESTIMATION USING INFRARED MEASUREMENTS FROM THE GEOSTATIONARY METEOSAT 8 SATELLITE TRAN Xuan Truong	389
72	ESTIMATION OF ROOT-ZONE SOIL MOISTURE FROM REMOTELY SENSED SURFACE SOIL MOISTURE TRAN Xuan Truong, PHAM Cong Khai	397
73	RELIABILITY EVALUATION OF GEODETIC HORIZONTAL CONTROL NETWORKS IN TUNNEL EXECUTION LUU Anh Tuan, TRUONG Quang Hieu	402
MINE ELECTRICITY AND AUTOMATION		
74	RESEARCH AND EVALUATE OVERVOLTAGE TRANSIENCE CAUSED BY SINGLE PHASE-GROUND FAILURES IN CAMPHA - QUANG NINH UNDERGROUND MINES' 6KV GRID HO Viet Bun	409
75	ANALYSIS ON THE FLOODING PHENOMENON OF DISTILLATION TOWER IN PETROLEUM PROCESSING INDUSTRY DANG Van Chi	412
76	SIMULATION AND MEASUREMENT METHODS FOR SWITC RELUCTANCE MACHINE MAGNETIC CHARACTERISTICS BUI Minh Dinh, LE Van Tuan	417
77	DTC DRIVES FOR TRACTION APPLICATIONS USING A TORQUE-MAXIMIZED FIELD WEAKENING ALGORITHM NGUYEN Thac Khanh, KIM Ngoc Linh, KIM Cam Anh	424
78	A NETWORK OF WIRELESS TEMPERATURE SENSORS BASED ON THE ZIGBEE PROTOCOL NGUYEN Duc Khoat, PHAM Minh Hai	431
79	THE APPLICATIONS OF SENSOR NETWORKS IN THE MINING INDUSTRY NGUYEN Duc Khoat, KHONG Cao Phong, VU Huy Hoang	435
80	RESEARCH AND DEVELOPMENT A PROTOTYPE OF MOBILE ROBOT TO DETECT TOXIC GAS AND HELP IN RESCUE WORK IN COAL MINING INDUSTRY PHAM Ngoc Minh, THAI Quang Vinh, NGUYEN Tuan Anh, NGUYEN Ha Phuong, HOANG Tung, NGUYEN Thanh Long, DANG Manh Chinh	438
81	STUDY ON APPLYING THE AUTOMATIC SYSTEM FOR TECHNOLOGICAL PROCESSES OF UNDERGROUND MINES IN VIETNAM VU The Nam, VU Tuan Anh	447

82	GENERAL PLANS OF RESTORATION FOR DISTRIBUTION NETWORKS WITH DISTRIBUTED GENERATION BUI Dinh Thanh	450
83	BUILDING UP THE POWER FACTOR CORRECTION CAPACITORS' SAFETY OPERATION REGION TO AVOID THE BAD EFFECT OF POWER HARMONICS ON QUANGNING'S 6KV OPEN PIT MINES LE Xuan Thanh	454
84	FORMING UP THE OPERATION CURVES FOR POWER FACTOR CORRECTION CAPACITOR BANKS THAT HELP TO AVOID THE PARALLEL RESONANCE WITH POWER HARMONICS ON QUANGNING'S 6KV OPEN PIT MINES LE Xuan Thanh, LE Van Tuan	459
85	CALCULATING EXPERIENCED MODIFYING FACTOR UTILIZED TO ANALYZE THE EFFECT OF 6KV EXCAVATORS ON POWER QUALITY IN QUANGNINH'S OPEN PIT COAL MINES NGUYEN Anh Nghia, LE Xuan Thanh	463
MINING MANAGEMENT AND SAFETY		
86	MAJOR MINERAL POTENTIAL IN VIETNAM ADVICE FOR FOREIGN INVESTORS SELECTING THE AREA FOR EXPLORATION AND DEVELOPMENT PROJEC NGUYEN Thi Thuc Anh	471
87	THE SYSTEMIZATION OF IMPACT FACTORS ON THE COAL LOSSES DONG Thi Bich, NGUYEN Thi Hoai Nga, DANG Huy Thai, BUI Thi Thu Thuy	478
88	INVESTOR'S PERSPECTIVE OF MINERAL TAX COLLECTIONS IN LAO PEOPLE'S DEMOCRATIC REPUBLIC-CASE STUDY OF VIENPHOUKHA COAL MINE Pipatt CHUENJAI, Pirat JAROONPATTANAPONG	481
89	RESTRUCTURING THE COAL INDUSTRY TO ENHANCE THE EFFECTIVENESS: THE STATUS QUO AND RESOLUTION FOR VINACOMIN PHAM Thu Huong	485
90	WAGE ESTIMATES FOR SOME POSITIONS AND MINING JOBS IN THE VIETNAMESE COAL MINING COMPANIES NGUYEN Ngoc Khanh	490
91	THE APPLICATION OF BUDDHIST PRINCIPLES TO SUSTAINABLE MINING MANAGEMENT JUERGEN Kretschmann, KRIDTAYA Sakamornsnguan	495
92	ORIENTATIONS IN DEVELOPMENT OF BUSINESS STRATEGY FOR THE VIETNAM COAL - MINERALS INDUSTRIES HOLDING CORPORATION LIMITED (VINACOMIN) AFTER RESTRUCTURING NGUYEN Thi Hong Loan	505
93	SUCCESSFUL TRANSFER OF GERMAN KNOW-HOW IN OCCUPATIONAL SAFETY AND HEALTH IN MINING TO SOUTHEAST ASIA NGUYEN Thi Hoai Nga, KRETSCHMANN Jürgen	509
ENVIRONMENTAL PROTECTION		
94	USING ENVIRONMENTAL ISOTOPE METHOD TO STUDY THE AIR TEMPERATURE VARIATIONS OF THE EARTH	515

	DO Van Binh	
95	RESEARCH ON THE CHANGES OF GROUND WATER QUALITY IN PLEISTOCEN AQUIFER (QP) IN BAC BO DELTA AREA DO Van Binh, BUI Hoc	520
96	DEVELOPMENT OF A METHODOLOGY FOR POST-MINING LAND USE PLANNING IN QUANG NINH, VIET NAM Katrin BROEMME, Harro STOLPE, Andreas BORGMANN, Sandra GREASSIDIS, Christian JOLK, Björn ZINDLER	526
97	EFFECT OF ANNEALING TEMPERATURE ON THE STRUCTURE OF ZNO FILMS MADE BY THE THERMAL EVAPORATION TECHNIQUE DANG Tran Chien	535
98	EVOLUTION AND MOBILITY OF HEAVY METAL AND ARSENIC IN POREWATER UPON SIMULATED ON LAND DISPOSAL OF DREDGED SEDIMENTS HO Huu Hieu, Valérie CAPPUYNS, Elvira VASSILIEVA, Tom Van GERVEN, TRAN Tan Van, Rudy SWENNEN, QUACH Duc Tin	539
99	STUDY ON CONTAMINANT ATTENUATION PROCESSES AT MINE SITES VU Dinh Hieu, MAI The Toan, NGHIEM Viet Hai	549
100	INFLUENCES OF RADIOACTIVE IN TITANIUM EXPLOITATION IN BINH DINH PROVINCE, VIET NAM DO Ngoc Hoan, NGUYEN Hoang, NGUYEN Thi Thuc Anh, TRAN Anh Dung, PHAM Ngoc Hoang	556
101	A NOVEL TECHNOLOGY USING THE COMBINATION OF LIMESTONE-SAWDUST-BACTERIA AND NANO TiO ₂ TO TREAT ACID MINE DRAINAGE WASTEWATER INTO DOMESTIC WATER NGUYEN Hoang Nam, DO Khac Uan, NGUYEN Hoang Hiep	560
102	CREATING NITROGEN MODIFIED TiO ₂ NANO MATERIAL BY UREA COVERED ON LATERITE APPLYING TO TREAT ORGANIC COMPOUND IN WASTE WATER NGUYEN Hoang Nam, NGUYEN Hoang Hiep	565
103	A METHOD TO DETERMINE THE SAFE YIELD FOR ARTESIAN BOREHOLE AT MINERAL GROUND WATER MINING, A CASE STUDY AT CHANH THANG MINERAL WATER MINING PHAM Quy Nhan, TRAN Thanh Le, HO Van Thuy	569
104	THE LEACHING AND SPECIATION BEHAVIORS OF ARSENIC AND SELENIUM IN TUNNEL-EXCAVATED ROCKS UNDER FLOW-THROUGH CONDITIONS Carlito Baltazar TABELIN, Ryosuke SASAKI, Toshifumi IGARASHI, Shuichi TAMOTO, Mayumi ITO, Naoki HIROYOSHI	573
105	CONTENT OF SOME HEAVY METALS IN WATER AND IN IPOMOEA AQUATIC COLLECTING FROM NHUE RIVER VU Phuong Thao, LE Xuan Tuan	582
106	FUSION OF ALOS PALSAR AND ASTER DATA FOR LANDCOVER CLASSIFICATION AT TONLE SAP FLOODPLAIN, CAMBODIA NGUYEN Van Trung, TRAN Xuan Truong	588
	LIST OF AUTHORS	595