



PROVISIONAL (11 SEPTEMBER 2019)

## **TECHNICAL PRESENTATIONS**

### **48<sup>TH</sup> UNDERWATER MINING CONFERENCE**

[WWW.UNDERWATERMINING.ORG](http://WWW.UNDERWATERMINING.ORG)

JW MARRIOTT DADONGHAI BAY  
BALLROOM

**TECHNICAL SESSIONS I, II AND III**  
MONDAY 23 SEPT THRU WEDNESDAY 25 SEPT

**ORAL PRESENTATIONS**  
(LISTED BY AUTHOR'S SURNAME)

#### **ENVIRONMENTAL ASPECTS OF SEAFLOOR MINERALS**

Investigating Midwater Discharge Sediment Plumes Associated with Deep-Sea Nodule Mining

Carlos Munoz-Royo, Massachusetts Institute of Technology, USA

Deep-sea mining sediment plumes: what we know and what we don't

Thomas Peacock, Massachusetts Institute of Technology, USA

Establishing a methodology to define criteria for a risk based impact assessment for offshore sea-floor massive sulphide extraction

Marcel Rozemeijer, Wageningen Marine Research, The Netherlands

Promoting Cost-Effective Capture of Quality Environmental Data from the Outset through Integration: A Focus on the CCZ

Scott Breschkin, ERIAS Group, Australia

#### **FERROMANGANESE CRUSTS**

Geochemical and microbial characteristics of ferro-manganese crusts at depths ranging from 1100m to 5500m on the seamount in the northwestern Pacific

Katsuhiko Suzuki, Japan Agency for Marine-Earth Science and Technology, Japan

Geological characterization of cobalt-rich ferromanganese crusts using deep-sea drill cores in the NW Pacific seamounts  
Akira Usui, Kochi University, Japan

Field Planning & Seafloor Production Tool Concept Review  
Wilson Zheng, Shanghai Jiao Tong University, China

## **SEAFLOOR MINERAL DEVELOPMENT: MULTIDISCIPLINARY PERSPECTIVES**

Sustainable development of Mineral Resources in the Area  
Pratima Jauhari, International Seabed Authority, Jamaica

Can Patents be considered Part of the Common Heritage of Mankind?  
Andreas Kaede, Kanzlei Kaede, Germany

Cook Islands New Seabed Minerals Act  
Paul Lynch, Cook Islands Government

An Unfinished Work: The Emerging Chinese Legal Regime and Management System of International Deep Seabed Mining  
Zhang Guobin, Shanghai Jiao Tong University, China

## **MOVING TOWARDS PRODUCTION**

State Practices of China in the Area  
Liu Feng, China Ocean Mineral Resources R & D Association, China

Designing Logistic System for Deep Sea Mining  
Govinder Chopra, SeaTech Solutions, Singapore

Development and Testing of a Hydraulic Nodule Collector while minimizing its Environmental Impact, Preliminary Results of Discharge Experiments (Blue Harvesting project)  
Rudy Helmons, TU Delft / 3mE /ODE, The Netherlands

Hazards and Risks in Deep-Seabed Mining  
Sup Hong, Korea Research Institute of Ships and Ocean Engineering, Korea

An economically and environmentally viable underwater mining solution  
Stef Kapusniak, Soil Machine Dynamics, United Kingdom

Progress of Chinese 1000m Deep Seabed Nodule Mining Test Project  
Li Xiangyang, China Ocean Mineral Resources R&D Association, China

Overview of a Pilot Study for Seabed Cobalt Mining  
Xu Lixin, China Merchant Offshore Technology Research Center, China

The sea trials of the second generation of the cobalt mining device  
Yang Ning, Institute of Deep-sea Science and Engineering, China

Surface Support System Selection for Deepsea  
Joe Zhou, China Merchant Offshore Technology Research Center, China

## **POLYMETALLIC NODULES**

Polymetallic Nodule Abundance Estimations based on High-Resolution AUV Data and Seabed Samples for DeepGreen's NORI Area D, Clarion Clipperton Zone  
Christine Devine, Fugro, Australia

Advances in investigation and study on the rare earth resources in deep-sea sediments in the Pacific Ocean  
Zhu Kechao, Guangzhou Marine Geological Survey, China

## **SEAFLOOR MASSIVE SULPHIDES**

Morphology and formation of SMS deposits in different geological settings  
Georgy Cherkashov, VNIIOkeangeologia, Russia

APEIs: Some thoughts about designation for crusts and sulphides  
Livia Ermakova, VNIIOkeangeologia, Russia

HOMESIDE – An Advanced Tool for Hydrothermal Plume Hunting and Polymetallic Sulphide Exploration in the Indian Ocean  
Ralf Freitag, Federal Institute for Geosciences and Natural Resources (BGR), Germany

Seafloor sulfide mineral deposition and remobilization  
Amy Gartman, US Geological Survey, USA

Assessing Hydrothermally Extinct Seafloor Massive Sulphide Deposits (eSMS): Lessons from the Blue Mining Project, Mid-Atlantic Ridge  
Bramley Murton, National Oceanography Centre, UK

## **TECHNOLOGICAL DEVELOPMENT**

Underwater acoustic positioning and navigation system

Lv Chengcai, Institute of Deep-sea Science and Engineering, China

Design Challenges of Riser & Lifting System

Andrew Lipman, American Bureau of Shipping, USA

Research on Nodules Collecting in Deep-sea Mining: An Efficient and Environmentally Friendly Technology in Hydraulic Collecting

Zhao Guocheng, Shanghai Jiao Tong University, China



## **TECHNICAL PRESENTATIONS**

### **48<sup>TH</sup> UNDERWATER MINING CONFERENCE**

JW MARRIOTT DADONGHAI BAY  
BALLROOM

## **POSTERS**

ON DISPLAY – BALLROOM FOYER  
MONDAY 23 SEPT THRU THURSDAY 26 SEPT

## **POSTER PRESENTATION SESSION**

AUTHORS/SPEAKERS MEET WITH PARTICIPANTS - BALLROOM FOYER  
TUESDAY, 24 SEPT, 13:30 – 14:15  
(LISTED BY AUTHOR'S SURNAME)

Non-supervised classification of benthic habitats based on seafloor geomorphology in the French Exploration Contract for Polymetallic Nodules – Clarion-Clipperton Zone  
Florian Besson, Ifremer, France

Acquiring exploration data from polymetallic sulphides on the Mohns Ridge on the Norwegian continental shelf  
Harald Brekke (Presenter), Norwegian Petroleum Directorate, Norway

Chatham Rock Phosphate – an example of a sustainable development of seabed mineral resources while minimising the environmental impact and using ground breaking technology  
Chris Castle, Chatham Rock Phosphate, New Zealand

Preparation of Bonded Super-hydrophobic Thin Film  
Chen Ming and Ma Haoxiang, Institute of Deep-sea Science and Engineering, China

Numerical Study on Settling and Floating Movements of a Sphere Particle Flowing in a Vertical Pipe  
Chen Yuxiang and Hong Xiong (*Presenter*), Institute of Deep-sea Science and Engineering, China

Shipboard magnetic and rock-magnetic characterization of hydrothermal activities in the North Fiji basin  
Sang-Bum Chi (Presenter), Korea Institute of Ocean Science & Technology (KIOST), Republic of Korea

The estimation study about the amount of collection in the pick-up device for the deep-sea mining system

Su-gil Cho, Korea Research Institute of Ships and Ocean Engineering, Korea

Design and Implementation of Monitoring System for Deep Sea Cobalt-rich Crust Sampling Vehicle

Dong Donglei, Huazhong University of Science and Technology, China

Seabed Mineral Resources Extraction-ICCP

Feng Guojing, Shanghai FB Oil Equipment, China

Low Grades Ultramagie-hosted SMS Deposits: Case Study of Pobeda Hydrothermal Field

Anna Firstova, VNIIOkeangeologia, Russia

GIS - based approach to define permissive areas for SMS exploration along the slow-spreading Mid-Atlantic Ridge

Sebastian Graber, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany

A3D method to dynamically model the cutting of submerged rocks with evaluation of pore pressure effects

Rudy Helmons, Delft University of Technology, The Netherlands

Design of Oval Plane Mirror Component in Marine Remote Sensing Satellite for Mineral Resources

Hu Yongming, Xi'an Institute of Optics, China

CO<sub>2</sub> outgassing suppressed by enhanced biological pump in the Eastern Tropical Pacific

Hyung Jeek Kim and Chan Min Yoo (*Presenter*), Korea Institute of Ocean Science and Technology, Korea

Mineral associations in the crusts from Mendeleev Ridge based on SEM-EDS and microprobe analyses

Natalia Konstantinova, VNIIOkeangeologia, Russia

Characteristics of the Polish contract area in the Mid-Atlantic Ridge

Agata Kozłowska-Roman, Polish Geological Institute, Poland

Assessment of polymetallic nodule resources using high-resolution AUV based geophysical imagery, near-bottom photographs and seabed boxcore sampling.

Gregory Kurras, Seafloor Investigations, USA

In situ Biomarker Discovery in Deep-sea Amphipods for Deep-sea Mining activities using TMT-based Comparative Proteomics

Kwan Yick Hang, Hong Kong University of Science & Technology, China

A Non-Metallic Riser Concept for the Ultra-Deep Seabed Mining Vertical Transport System

Frank Lim, 2H Offshore, UK

Research on Shipborne Dewatering Process Technology in Deep-sea Sulfide Mine  
Liu Shimei and Zhou Yueyuan, Changsha Research Institute of Mining and Metallurgy,  
China

Deep-sea Mining Equipment Researching in Marine Equipment and Technology Institute  
of Jiangsu University of Sci and Tech  
Lu Daohua, Jiangsu University of Science and Technology, China

Determining and communicating marine mineral resource estimates to the broader  
minerals industry  
Campbell McKenzie, RSC Mining, New Zealand

Titanium Concentration in the Mineral Phases of Ferromanganese Deposits from the N-W  
Pacific  
Pavel Mikhailik, Far East Geological Institute, Russia

A review of the structural health monitoring for marine risers/pipes  
Min Cheonhong, Korea Research Institute of Ships and Ocean Engineering, Korea

A study on the simulation-based design technology of the subsea equipment using DIMS  
toolkit  
Jaewon Oh, Korea Research Institute of Ships and Ocean Engineering, Korea

A preliminary study on the geological continuity of polymetallic nodules in the deep-sea  
basin between guyots Suda and Scripps of the western Pacific based on coverage from  
Towed Camera Sledge  
Ren Xiangwen, First Institute of Oceanography, China

Uranium in seafloor massive sulfides at the Mid-Atlantic Ridge  
Anna Sukhanova, VNIIOkeangeologia, Russia

Copper-rich disseminated sulfides near a transform fault on the southern Carlsberg Ridge:  
Implications for off-axis seafloor massive sulfide mineralization  
Wang Yejian, Second Institute of Oceanography, China

Transparency, public participation and access to justice in the context of deep sea mining:  
Luxury or legal obligation?  
Klass Willaert, Ghent University, Belgium

Feasibility study of combined mining of rare-earth element rich mud and manganese  
nodules by pulp-lift in Japan's EEZ  
Tetsuo Yamazaki, Osaka Prefecture University, Japan

Visual Simulation of Deep-Sea Mining System  
Zhang Guiping, Central South University, China

Current Situation and Prospect of Technological Development in Deep Sea Mining by  
China Minmetals Corporation  
Zhuo Xiaojun, Minmetals Corporation, China