



UMC 2023 UNDERWATER MINERALS CONFERENCE



Sunday, October 1, 2023 - WELCOME RECEPTION

INTRODUCTION by Dr. Samantha Smith - Welcome; Introduce IMMS, Volunteers and Staff

16:00 PRE-REGISTRATION STARTS - Desk located at the lobby of the Mainport Hotel

17:00 begin

19:00 end

WELCOME COCKTAIL AT THE MAINPORT HOTEL

Monday, October 2, 2023 - TECHNICAL SESSIONS I and II

#	Time	Presenter	Affiliation	Country	Title
	8:00	REGISTRATION STARTS - Desk located at the 15th Floor of the Inntel Hotel at Rotterdam Centre			
	9:00	Call to Order and Introduction to IMMS by Technical Chair Dr. Samantha Smith			
	9:20	Session Chair Dr. Samantha Smith	Blue Globe Solutions/GSR		INTRODUCTION to Presentations of Technical Session I - Legal and Social Licenses
1	9:25	Andrew Lipman	American Bureau of Shipping (ABS)	China	Towards a universal set of Subsea Mining Standards and Recommended Practices
2	9:50	Torild Nissen-Lie	DNV	Norway	ESG Handbook for marine minerals
3	10:15	Sup Hong	Korea Research Institute of Ships & Ocean Engineering	Korea	Review of Functional Requirements for Sustainable Mining of Deep-Seabed Minerals
4	10:40	Guobin Zhang	Shanghai Jiao Tong University	China	Moving Forward: The Emerging Chinese Legal Regime on International Deep Seabed Mining De Lege Ferenda
	11:05	Coffee Break - 15 minutes			
5	11:20	Corey McLachlan Nathan Eastwood	The Metals Company Watson Farley & Williams	Canada Australia	Obtaining a provisionally approved Plan of Work for exploitation in the absence of Exploitation Regulations
	12:00	Session Chair Dr. Mark Luther	University of South Florida		INTRODUCTION to Presentations of Technical Session II - Exploration
6	12:00	Espen Hauge	Norwegian Petroleum Directorate	Norway	Potential Seabed Mineral Resources on the Norwegian Continental Shelf - Insights from the Norwegian Petroleum Directorate
7	12:25	Paul Knorr	BOEM	USA	Critical and Hard Minerals Exploration and Management on the United States Outer Continental Shelf
8	12:50	Katz Suzuki	JAMSTEC	Japan	Factors contributing to changes in the growth rate of Fe-Mn crusts in the Northwest Pacific: Constraints from Os isotopic stratigraphic age
	13:15	LUNCH Break- 1 hour			
9	14:15	Rahul Sharma	National Institute of Oceanography, Goa	India	Evaluation of seafloor characteristics as inputs for nodule mining
10	14:40	Akira Tsune	Deep Ocean Resources Development (DORD)	Japan	Geological features of deep-sea polymetallic nodules in the Japanese contract area of the Clarion Clipperton Zone
11	15:05	João Carvalho	Deep Focus	Portugal	Is there room to explore for PMN in CCZ?
12	15:30	Alden Denny	Adepth Minerals	Norway	Efficiency in the Deep: SIMOPS In Deep-Sea Exploration
	15:55	Coffee Break - 15 minutes			
13	16:10	Berit Lund	Kongsberg	Norway	Sensing the Deep
14	16:35	Anna Lim	Argeo	Norway	Advancing Deep-Sea Mineral Exploration: Leveraging AUVs for Comprehensive Data
15	17:00	Espen Simonstad	Green Minerals AS	Norway	The NCS, improving the exploration process by better understanding the value as the opening progresses
16	17:25	Hans Smit	Moana Minerals	Cook Islands	Maximizing Exploration ROI in Support of Ecosystem Based Management - The New Norm?
	17:50	End of the day			



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Tuesday, October 3, 2022 - TECHNICAL SESSIONS III, IV and V

#	8:50	Session Chair Dr. Samantha Smith	Blue Globe Solutions/GSR		INTRODUCTION to Presentations of Technical Session III - Impact Assessment and Monitoring (including of sediment plumes)
17	9:00	Diana Viegas	INESCTEC	Portugal	TRIDENT - Technology based impact assessment tool for sustainable, transparent deep sea mining exploration and exploitation
18	9:25	Andy Banks	DHI Group	Denmark	Data Analytics in Deep Sea Mining
19	9:40	Ole Larsen	DHI Group	Denmark	Adaptive Framework for Monitoring and Management of Plumes
20	9:55	Bjoern Elsaesser	DHI Group	Denmark	Observing Sediment Plumes with Vessel-mounted and Static Instruments
21	10:15	Thomas Peacock	Massachusetts Institute of Technology (MIT)	USA	Near field dynamics of deep-sea mining sediment plumes; insights from a pre-prototype nodule collector trial
22	10:40	Souha El Mousadik	Massachusetts Institute of Technology (MIT)	USA	Learnings from in situ Measurements of Sediment Particles in Plumes Generated by Deep-seabed Mining in the CCZ
	11:05	Coffee Break - 15 minutes			
23	11:20	Iason-Zois Gazis	GEOMAR Helmholtz Centre for Ocean Research	Germany	Deep-sea mining trials in Clarion-Clipperton Zone: Advances in resource estimation, plume monitoring, and environmental impacts
24	11:55	Guocheng Zhao	Shanghai Jiao Tong University	China	Laboratory Study of the Disturbance of Polymetallic Nodule Mining to Deep-sea Sediments
25	12:20	Rudy Helmons	Delft University of Tech.	Netherlands	Monitoring of sediment plumes produced by a hydraulic nodule collector
26	12:35	Said Alhaddad	Delft University of Tech.	Netherlands	Interaction of Turbidity Currents Generated By Polymetallic-Nodule Mining
27	12:50	Mohamed Elerian	Delft University of Tech.	Netherlands	Numerical Investigation of Turbidity Flows Generated by Nodules Mining
	13:10	LUNCH Break- 1 hour			
28	14:10	Patrick Schwing	Eckerd College	USA	Short-lived radioisotopes are effective tools for constraining the extent of deep sea mining collector sediment plumes
29	14:25	Bryan O'Malley	Ecofera/Eckerd College	USA	Benthic foraminifera are useful bioindicators to establish baselines and monitor the effects of a full-scale deep sea mining test in the CCZ
30	14:50	Ebbe Hartz	Aker BP	Norway	Advancing Objective Quantification of Seabed Mining Impacts
	15:15	Session Chair Dr. Charles Morgan	Moana Hohonu Consulting		INTRODUCTION to Presentations of Technical Session IV - Cook Islands
31	15:15	Rima Browne	Seabed Minerals Authority	Cook Islands	Scales in the management of the marine environment and seabed minerals in the Cook Islands
32	15:40	Mark Luther	University of South Florida	USA	Exploratory Data Analysis/Synthesis in Support of Cook Islands Nodule Exploration
33	16:05	Laurie Meyer	Moana Minerals	Cook Islands	Optimizing Performance, Economics and Environmental Footprint in the Processing of Cook Islands Nodules
	16:30	Coffee Break - 15 minutes			
	16:45	Session Chair Dr. John Wiltshire	University of Hawaii		INTRODUCTION to Presentations of Technical Session V - Research and Development (including field trials)
34	16:45	Jason Gillham	Impossible Metals	USA	Eureka 1 Shallow water test results
35	17:10	George Adams	OSI Minerals	USA	Successful Field Trials Support the Acceleration of Deepsea Mineral Gathering
36	17:35	Britt Blankenaar Berend Lenselink	Allseas	Netherlands	Pilot Mining Test in the NORI D license area of the CCZ
37	18:00	Leigh Marsh	The Metals Company	Canada	Test Mining of Polymetallic Nodules in the CCZ
	18:25	End of the day			



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Wednesday, October 4, 2023 - TECHNICAL SESSION VI and VII

#	8:00	IMMS Annual General Meeting (all are welcome)			
	8:50	Session Chair Dr. John Wiltshire	University of Hawaii		INTRODUCTION to Presentations of Technical Session VI - Technology
38	9:00	Gregory Abramov	Borehole Mining International	USA	Underwater Mining and Other Technologies Forming the Modern Mining Wheel
39	9:25	Marcio Yamamoto	National Maritime Research Institute	Japan	Review of Deep Sea Mining R&D Activities in NMRI: 2019-2023
40	9:50	Tore Halvorsen	UKSR - Loke Marine Minerals	Norway	New Manganese Nodule Collector for minimum sediment pick-up
41	10:15	Aaron Barr	Transocean	USA	Factors affecting offshore offloading and trans-shipment of polymetallic nodules
	10:40	Coffee Break - 15 minutes			
42	10:55	Guido Van den Bos	NOV	Netherlands	Deepsea Mineral Extraction Technology Adaptation: From a Vessel Design & OEM's perspective
43	11:35	Edwin de Hoog	Royal IHC	Netherlands	Deep sea mining vertical hydraulic transport pipelines: design guidelines and operational considerations
44	12:00	Jim Wodehouse	Deep Reach Technologies	USA	Application of Proven Technology to Nodule Offloading from a Production Vessel to a Transport Vessel in the Open Ocean, and Sensitivity of the Costs
45	12:25	Frank Lim	2H Offshore Engineering	UK	Deep Seabed Mining Slurry Transport Riser Pipe Alternatives
46	12:40	Richard Harrison	2H Offshore Engineering	UK	Natural Frequencies of Free Hanging Structures
	13:00	LUNCH Break- 1 hour			
	14:00	Session Chair Dr. Samantha Smith	University of Hawaii		INTRODUCTION to Presentations of Technical Session VII - Other Jurisdictions and Other Ideas
47	14:10	Oliver Gunasekara	Impossible Metals	USA	Impossible Metals roadmap update and a sneak peak at Eureka 2
48	14:35	Wai Long Ng-Cutipa	IGME	Spain	Titanium, Zirconium and Rare Earth Element placer deposits in coastal environments of Rías Baixas (Galicia, NW Spain)
49	15:00	Wiebe Boomsma	Royal IHC	Netherlands	Underwater Mining in a Terrestrial Setting: Advantages, Challenges, and Technological Perspectives
50	15:25	Edward Cassano	Pelagic Research Services	USA	From Titanic to CCZ: Critical Deep-Water Expertise for All Disciplines
	17:00	Session Chair Dr. Mark Luther	University of South Florida	USA	POSTER SESSION AT THE SS ROTTERDAM (open bar)
		Adne Jonsbraten	NTNU	Norway	Potential tax regimes on investment incentives in marine minerals projects
		Alexander Mölle	TU Freiberg/ Bauer AG	Germany	Inertial Navigation System for Mining Equipment
		Ali Waqas	DELFT University of Tech.	Netherlands	Potential of natural flocculation in reduction of deep sea mining plumes
		Douglas Waldron	Xymat	USA	Use of High Strength Aluminum Potential for Drilling and Mining Applications
		Jack Zhang	Shanghai Blue Future	China	An Overview of Ocean Minerals Developments and Opportunities in China
		Jie Zheng	Shanghai Jiao Tong Univ.	China	Promoting Cooperation between China and the EU in Deepsea Mining
		Jinyuan Wu	National Cheng Kung Univ.	Taiwan	Development and Maneuverability Analysis of AUVs
		Josh Marsh	NTNU and DNV	Norway	Deep-sea mining sediment tracking: The use of tracer technology
		Koen van Pelt	DELFT University of Tech.	Netherlands	Sediment Dispersion from a Moving Source
		Inkyeong Moon	KIOST	Korea	Exploration plan of Korea CFC contract area in western Pacific (2022-2028)
		Mark Mussett	Odyssey Marine Exploration	USA	Goal-oriented mineral exploration management
		Nishi Keisuke	Deep Ocean Resources Dev.	Japan	DORD's Activities for Polymetallic Nodule Mining
		Raoul Schmitt	NTNU	Norway	A conceptual design approach for a Co-rich crust extraction system
		Tetsuo Yamazaki	Osaka Metropolitan Univ.	Japan	Comparisons between Deep-sea Mining and On-land Mining
		Tore Halvorsen	Loke Marine Minerals	Norway	Nodule Digital Box Coring System
		Tore Halvorsen	Loke Marine Minerals	Norway	Manganese Crust Exploration Technology
		Tristan Lam	Eckerd College	USA	Methods for Classification of Nodule-Epilitic Benthic Foraminifera
		TsungHan Wu	National Cheng Kung Univ.	Taiwan	Design and Image Tracking of Underwater Manipulator
		Yeon Suh	KIOST	Korea	Geological and biological characteristics of selected PMS sites in India
	19:00	51st UMC BANQUET - Address by Mr. David Weight At the SS ROTTERDAM (all included)			
	22:00	End of the day			



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Thursday, October 5, 2023 - Technical Session VIII and Discussion Session

	9:00	Session Chair Dr. John Wiltshire	Moana Hohonu Consulting		INTRODUCTION to Presentations of Technical Session VIII - Polymetallic Sulphides
51	9:00	Cornel De Ronde	GNS Science	New Zealand	Are submarine hydrothermal systems the shallow parts of porphyry Cu systems?
52	9:25	Matthias Semel	Bauer Maschinen GmbH	Germany	Exploration drilling of massive sulfide deposits
53	9:50	Harald Brekke	Norwegian Petroleum Directorate (NPD)	Norway	Data acquisition on the Knipovich Ridge - preliminary results
54	10:15	Orita Kiyotaka Seiya Kawano	JOGMEC	Japan	Conceptual Study of Production and Lifting Systems for Seafloor Massive Sulfides Mining
55	10:50	Julien Marticorena	ABYSSA	France	Habitat suitability modelling of deep-sea inactive hydrothermal habitats in relation to topographic variables within the Lucky Strike vent field
	11:15	Coffee Break - 15 minutes			
	11:30	Technical Chair Dr. Samantha Smith	Blue Globe Solutions	Canada	INTRODUCTION to Workshops and Discussion Panels
	11:30	DISCUSSION PANEL	ABS		New Proposed Subsea Mining Academy
	12:00	DISCUSSION PANEL			Alpha Radiation and Polymetallic Nodules: What the Latest Science Tells us
	13:00	Lunch Break - 1.5 hours			
	14:30	WORKSHOP	DNV		ESG (Environment, Social, Governance) Handbook for Marine Minerals
	16:00	Coffee Break - 15 minutes			
	16:15	WORKSHOP Cont.	DNV		ESG (Environment, Social, Governance) Handbook for Marine Minerals
	17:30	End of the day			

Friday, October 6, 2023 - Field trip

		FIELD TRIP: TECHNICAL AND SIGHTSEEING TOUR (registration required)			
	9:00				
	10:00	Stop 1			Port of Rotterdam with Maasvlakte 2
	13:00	Boxed Lunch			
	13:30	Stop 2			Royal IHC Yard
	15:00	Stop 3			Windmills at Kinderdijk
	17:30	End of the day			

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