

July 1–6

Lisbon, Portugal

**The Seventeenth (2007) International
Offshore (Ocean) and Polar Engineering Conference**

**5th ISOPE HPM Symposium:
Nanomaterials for Structural Application**

1st ISOPE Strain-Based Design Symposium

**7th ISOPE
Ocean Mining (& Gas Hydrates)
Symposium**

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ISOPE-2007

Corinthia Lisboa Hotel
Lisbon Portugal; July 1–6

Technical Program

Refereed papers from **48** countries in **120** sessions and
7 plenary sessions

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TECHNICAL PROGRAM

The Seventeenth (2007) International Offshore and Polar Engineering Conference

Lisbon, Portugal, July 1–6, 2007

The number at end of the session title indicates the tentative number of the proceedings volume. Only the changes on titles or authors the ISOPE-2007 Technical Program Committee (TPC) received in writing before January 22, 2007 are reflected in this program. Paper titles in blue color are additions to the printed version of the technical program. Final corrections will be updated in the Conference Proceedings and the Final Program. Proceedings CD-ROM (ISBN 1-880653-68-0; ISBN 978-1-880653-68-5) will be available as a set of 4 volumes (3,600 pp. est.) from ISOPE during and after the Conference.

SUNDAY, July 1

Conference Reception

17:00

To Be Announced

MONDAY 09:00

1. OCEAN & ARCTIC INDUSTRY REVIEW (V. 1)

Monday July 2 09:00 Floriana

Chair: Langen, I, University of Stavanger, Norway

Co-Chair: Isaacson, M, University of British Columbia, Canada

Opening Address

Matsui, T, ISOPE President, USA.

Engineering Challenges Driven by the Navy and Navy after Next [Oral presentation]

Gruber, P L, Office of Naval Research, USA

Subsea Development in the Ormen Lange Offshore Project

Eklund, T, Hydro Oil and Energy, Norway

Polar Rules: Are Harmonized Standards Good for Shipping?

Santos-Pedro, V, Transport Canada, Canada

East Siberian Pipeline: State and Development

Koff, GL, Russian Ministry of Emergency Situations/Rosstroy;
Bekker, AT, Far-Eastern State Technical Univ, Russia

Eurocode 8 – Design for Earthquake Resistance of Foundations

Sêco e Pinto, P S, Univ of Coimbra /LNEC, Portugal

**The 7th (2007) ISOPE
Ocean Mining (& Gas Hydrates)
Symposium**
at ISOPE-2007 Conference, Corinthia Lisboa Hotel
Lisbon, July 1–6, 2007

Cooperated by:

International Society of Offshore and Polar Engineers (ISOPE)
U.S. National Science Foundation (NSF)
Mining and Materials Processing Institute of Japan (MMIJ)
Korea Association for Deep Ocean Minerals Development (KADOM)
Korea Society of Ocean Engineers (KSOE, formerly KCORE)
National Institute of Oceanography (NIO, India)
Interoceanmetal Joint Organization (IOM, Poland)
Japan Society of Naval Architects and Ocean Engineers (JSNAOE)
China Ocean Mineral Resources R&D Association (COMRA)

51. OMS-2007 OCEAN MINING I (V. 1)

Tuesday July 3 14:00 Jade I

Chair: Liu, S, Central South Univ, China
Co-Chair: Stoyanova, V, InterOceanmetal Joint Organization, Poland

The 7th Ocean Mining Symposium: Introduction
Chung, J S, ISOPE, USA

**Deep Sea Scientific Drilling Vessel “CHIKYU” – for New Science at
Deeper Frontier of the Earth’s Interior**
Kyo, M, JAMSTEC, Japan

**The Dawning of Deep Sea Mining of Metallic Sulfides: The Geologic
Perspective**
Scott, S D, Univ of Toronto, Canada

**Establishment of the Environmental Baselines Within the IOM’s
Contact Area in Context of the Current Recommendations and
Requirements Created by the ISA**
Stoyanova, V, InterOceanmetal Joint Organization, Poland

Deep-ocean Mining Technology III: Developments
Chung, J S, ISOPE, USA

58. OMS-2007 OCEAN MINING II: DOW (V. 1)

Tuesday July 3 16:20 Jade II

Chair: Otsuka, K, Osaka Prefecture Univ, Osaka, Japan
Co-Chair: Ouchi, K, Ouchi Ocean Consultant, Japan

**Three Years Operation of Ocean Nutrient Enhancer TAKUMI in
Sagami Bay**
Ouchi, K, Ouchi Ocean Consultant, Japan

Strain Measurement on Riser Pipe of “TAKUMI”
Maeda, K, Takahashi, I, National Maritime Research Inst; Miyabe, H, IHI
Marine United; Masuda, S, JFE Soldec, Japan

**Study on Discharged Water from Ocean Nutrient Enhancer
“TAKUMI” Using Thermal Stratified Tank**
Ikegami, Y, Umeki, M, Bando, A, Sakurazawa, S, Saga Univ; Ouchi, K,
Ouchi Ocean Consultant, Japan

Ecological Footprint Accounting of “TAKUMI”
Otsuka, K, Osaka Prefecture Univ, Japan

Hybrid Installation Method for the Construction of Deep Water Intake System

Jung, D H, Kim, H J, MOERI/KORDI; Park, H I, Korea Maritime Univ, Korea

Deep Ocean Water in Taiwan: Water Quality and Future Utilization
Liu, T K, Yu, J L, Kao, R C, Hwnung, H H, National Cheng Kung Univ, Taiwan, China

68. OMS-2007 OCEAN MINING III: Gas Hydrates 1 (V. 1)

Wednesday July 4 08:00 Opala III

Chair: Komai, T, AIST, Tsukuba, Japan

Co-Chair: Kang, S P, KIER, Korea

An Experimental Investigation of Rheology of Condensate Oil/Tetrahydrofuran Hydrate Slurry

Yao, H Y, Li, Q P, CNOOC; Chen, G J, Gong, J, China Univ of Petroleum, China

Compaction Behavior of Toyoura Sand during Methane Hydrate Dissociation

Aoki, K, Masui, A, Haneda, H, Ogata, Y, National Inst of AIST, Japan

Mechanical Properties of Sandy Sediment Containing Marine Gas Hydrate in Deep Sea off the Coast of Japan

Masui, A, Haneda, H, Ogata, Y, Aoki, K, National Inst of AIST, Japan

Application of Compliance Technique to Understanding of Stress-strain Relationship for Methane Hydrate Bearing Sediment

Miyazaki, K, Masui, A, Haneda, H, Ogata, Y, Aoki, K, National Inst of AIST, Japan

Simulation of Triaxial Compression Tests on Soil Samples Obtained from Seabed Ground in Deep Sea by Elasto-visco Plastic Constitutive Equation

Ogisako, E, Nishio, S, Denda, A, Shimizu Corp; Oka, F, Kimoto, S, Kyoto Univ, Japan

Estimation of Surface of Area of Methane Hydrate in Sediments

Nakayama, H, Univ of Tokyo; Ogasawara, K, AIST; Sato, T, Univ of Tokyo; Yamasaki, A, Kiyono, F, AIST, Japan

Seafloor Displacement Monitoring by Double Integral Technique Using Servo-accelerometer System

Tokoyama, T, Saito, H, Uchiyama, S, OYO Corp, Japan

78. OMS-2007 OCEAN MINING IV: Gas Hydrates 2 (V. 1)

Wednesday July 4 10:30 Opala III

Chair: Ohga, T, Hokkaido Univ, Japan

Co-Chair: Masui, A, AIST, Japan

Measurement of Thermal Properties for Methane Hydrate Sedimentary Layer - 2

Yamamoto, Y, Kawamura, T, Ohtake, M, Komai, T, Tsuji, T, Tsukada, Y, National Inst of AIST, Japan

Experimental Study on Steam Injection Method Using Methane Hydrate Core Samples

Kawamura, T, Ohtake, M, Sakamoto, Y, Yamamoto, Y, Haneda, H, Komai, T, Higuchi, S, National Inst of AIST, Japan

Experimental Study on the Liquid CO₂ Formation at the 30MPa

Jung, R T, Ryu, J W, Kang, S G, MOER/KORDI, Korea

Effects of Pore Sizes on Formation Kinetics of Carbon Dioxide and Methane Hydrates in Porous Media

Kang, S P, Korea Inst of Energy Research, Korea

An Investigation for Dissociation Process of Methane Hydrate Using Inhibitor Injection

Nakatani, N, Osaka Prefecture Univ; Kuroda, K, Kurimoto Ltd; Okuno, T, Osaka Prefecture Univ, Japan; Masutani, S M, Hawaii Natural Energy Inst, USA

Experimental Study on Dissociation Behavior of Methane Hydrate by Hot-brine Injection

Ahn, T W, Lee, J H, Huh, D G, Kang, J M, Seoul National Univ, Korea

88. OMS-2007 OCEAN MINING V: Gas Hydrates 3 (V. 1)

Wednesday July 4 14:00 Opala III

Chair: Sato, T, Univ of Tokyo, Japan

Co-Chair: Kawamura, T, AIST, Japan

Measurement of Methane Hydrate Sediment Permeability Using Several Chemical Solutions as Inhibitors

Minagawa, H, Nishikawa, Y, Ikeda, I, Sakamoto, Y, Komai, T, Narita, H, National Inst of AIST, Japan

Assessment of the Absolute Permeability of Natural Methane Hydrate Sediments by Microfocus X-ray Computed Tomography

Jin, Y, Hayashi, J, Nagao, J, Suzuki, K, Minagawa, H, Ebinuma, T, Narita, H, National Inst of AIST, Japan

The Experimental Studies and Development Concept for the Offshore Natural Gas Hydrate

Li, Q P, Zeng, H Y, Dong, W L, Wang, Z J, CNOOC Resesarch Center; Feng, Z P, Tang, L G, Li, X S, Guangzhou Inst of Energy Conversion, CAS, China

Field Scale Simulation for the Effect of Relative Permeability on Dissociation and Gas Production Behavior during Depressurization Process of Methane Hydrate in Marine Sediments

Sakamoto, Y, Komai, T, Kawamura, T, Tenma, N, Yamaguchi, T, AIST, Japan

Permeability of Artificial Methane Hydrate Sediment in Radial Flow System

Shimokawara, M, Ohga, K, Hokkaido Univ; Sakamoto, Y, Komai, T, Yamaguchi, T, AIST, Japan

Observation of Self-preservation Effect of Methane and Ethane Hydrate

Nagao, J, Shimomura, N, Jin, Y, National Inst of AIST; Shima, W, Toyama Univ; Ebinuma, T, Narita, H, National Inst of AIST, Japan

Complex Structure Transition Induced by Swapping Process Occurring in Natural Gas Hydrate Layer

Seol, J W, Yeon, S H, Park, Y J, Kim, D Y, Lee, J W, Yoon, J H, Lee, H, KAIST, Korea

Experimental Study on Formation of Propane Gas Hydrate by Fluidized Bed Type Reactor

Arai, T, Kato, Y, Iwasaki, T, Kanda, N, Uchida, K, Mitsui Engineering & Shipbuilding, Japan

Preliminary Modeling of Chemosynthetic Ecosystem around Methane Seepage

Yamazaki, T, Takeuchi, R, National Inst of AIST; Monoe, D, Oomi, T, Chuden CII; Nakata, K, Kotai Univ; Fukushima, T, Ocean Policy Research Foundation, Japan

98. OMS-2007 OCEAN MINING VI (V. 1)

Thursday July 5 08:00 Opala III

Chair: Hong, S, MOERI, Korea

Co-Chair: Yamazaki, T, Natl Inst of AIST, Japan

Identification of Factors and Conditions Potentially Responsible for the Buried Nodules Occurrence in the Eastern Clarion-Clipperton Zone (NE Pacific)

Kotlinski, R, Stoyanova, V, Interoceanmetal Joint Organization, Poland

Applicability Evaluation of the Surface Wave Exploration to the River Marine Geology Investigation

Fujimura, H, Tottori Univ; Tanaka, T, Hayashi, K, OYO Co; Kita, T, TK Land and Sea Investigation Office, Japan

Concentrated and Gastight Sampler of Deep-sea Microplankton

Huang, Z H, Li, L, Central South Univ; Jin, B, Zhejiang Univ; Liu, S J, Central South Univ, China

Economic Validation Analyses of Japan's Nodule, Crust, and Kuroko-type SMS Mining in 2006

Yamazaki, T, National Inst of AIST, Japan

Slip Control Simulation of Tracked Vehicle Based on Prediction of Instantaneous Rotation Center

Yeu, T K, Hong, S, Park, S J, Choi, J S, Kim, H W, Maritime and Ocean Engineering Research Inst, Korea

Design of a Hardware-in-the-loop Simulation (HILS) of Control and Monitoring System for Deep-seabed Manganese Nodule Miner

Park, S J, Yeu, T K, Hong, S, Choi, J S, Kim, H W, Maritime and Ocean Engineering Research Inst; Kim, S B, PKNU, Korea

108. OMS-2007 OCEAN MINING VII (V. 1)

Thursday July 5 10:30 Opala III

Chair: Yoon, C H, Korea Inst of Geoscience and Mineral Resources, Korea

Co-Chair: Li, L, Central South Univ, China

Metamodel-based Multidisciplinary Design Optimization of Ocean Mining Collector for Manganese Nodules

Lee, M U, Jung, J J, Yoo, J H, Lee, T H, Hanyang Univ; Hong, S, Choi, J S, Kim, H W, Maritime and Ocean Engineering Research Inst, Korea

Rich-crusts Miner's Simulation of Moving Ability on Seamount

Li, L, Central South Univ, China

Experimental Study of Manganese Separation from Solid-liquid Mixture Using Hydrocyclone

Park, Y C, Yoon, C H, Kim, Y J, Lee, D K, Kwon, S K, Korea Inst of Geoscience and Mineral Resources, Korea

Development of a Self-propelled Test Collector for Deep-seabed Manganese Nodules

Hong, S, Choi, J S, Kim, H W, Yeu, T K, Maritime and Ocean Engineering Research Inst; Lee, T H, Yoo, J H, Jung, J J, Hanyang Univ, Korea

A Study on the Solid-liquid Helical Flow in a Slim Hole Annulus

Kim, Y J, Yoon, C H, Park, Y C, Lee, D K, Kwon, S K, Korea Inst of Geoscience and Mineral Resources; Hwang, Y K, Woo, N S, Sungkyunkwan Univ, Korea

118. OMS-2007 OCEAN MINING VIII (V. 1)

Thursday July 5 14:00 Opala III

Chair: Sobota, J, Wroclaw Univ, Poland

Co-Chair: Sharma, R, National Inst of Oceanography, India

Development and Testing of Underwater Mining Systems for Long Term Operations Using Flexible Riser Concept

Deepark, C R, Ramji, S, Ramesh, N R, Babu, S M, Raju, A, Shajahan, M A, Atmanand, M A, National Inst of Ocean Technology, India

Three Dimensional Solid-liquid Flow Analysis for Design of Two-stage Lifting Pump

Yoon, C H, Kim, Y J, Park, Y C, Lee, D K, Kwon, S K, Korea Inst of Geoscience and Mineral Resources, Korea

COMRA's Research on Lifting Pump

Zou, W S, Central South Univ/Hunan Univ, China

Effect of Particle Size Distribution and Concentration on Flow Behaviour of Complex Slurries

Vlasak, P, Chara, Z, Inst of Hydrodynamics, Academy of Sciences, Czech Republic

Two-Phase Vertically Upward Transport of Fine Silica Sands in Dilute Polymer Solution: Drag Reduction and Effects of Sand Size and Concentration

Chung, J S, ISOPE; Lee, K, Kiewit Construction; Tischler, A, Aera Energy, USA

Research on the Movement of Solid Particles in Vertical Pipeline

Palarski, J, Plewa, F, Silesian Univ of Technology; Sobota, J, Wroclaw Univ; Strozik, G, Silesian Univ of Technology, Poland

Analysis of Elementary Head Loss by the Flow of Two Phase (Water-solid Particles) Mixtures in Vertical Pipeline on the Basis of Theoretical Model of Two Phase Mixtures Flow in Vertical Transportation Systems

Palarski, J, Plewa, F, Silesian Univ of Technology; Sobota, J, Wroclaw Univ; Strozik, G, Silesian Univ of Technology, Poland

FRIDAY July 6

Tours: Lisbon and Portugal

Make advance reservation: www.semlimite.pt

About Lisbon: www.atl-turismolisboa.pt

Find further details inside the program and www.isopec.org .

Prospective authors are invited to submit abstract to:

ISOPE PACOMS-2008 Bangkok

The 8th ISOPE Pacific/ Asia

Offshore Mechanics Symposium

Bangkok, Thailand, November 10–13, 2008

Call For Papers

Abstract Deadline February 25, 2008

Manuscript Deadline (review) June 1, 2008

Three-day symposium sessions are being organized: For detail, visit www.isopec.org.

Send (E-mail, fax or online) your abstract in 300-400 words to: ISOPE PACOMS-2008 IOC, ISOPE, P.O. Box 189, Cupertino, California 95015-0189, USA: meetings@isopec.org; Fax: +1-650-254-2038.

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Corinthia Lisbon Hotel (5-star), July 1–6, 2007

Corinthia Lisbon Hotel (5 stars) is the official venue for the Conference. If making your reservation at ISOPE room rate without this form, you must indicate that reservations are for the *ISOPE Conference*. In order to have your room guaranteed, this reservation form with **one (1)** night's deposit must be received **via either fax or mail** only and **no later than April 1, 2007** by (and also confirmation via fax or email by):

Group Reservation (ISOPE-2007): maria.costa@corinthia.pt

Corinthia Lisbon Hotel: Fax: +351-217-236-364

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Classic Double €125 ___ Sgl / Dbl / ___ Twin**

Supplem Exec Extra €50 ___ Sgl / Dbl / ___ Twin**

“Supplementary Exec” is Executive Room with €50 extra charge.

* Rates include VAT of 5% (subject to change) and breakfast.

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Card no.: _____ 3- or 4-digit code _____

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Signature: _____ Date: _____, 2007

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Reservation by either fax or e-mail only.

Reservation after **April 1** is subject to room availability.

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