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June 20–26, Beijing, China

**The Twentieth (2010) International
Offshore (Ocean) and Polar
Engineering Conference**

including

- 2nd Sloshing Dynamics & Design**
(ISOPE SDD-2010) Symposium
- 1st Arctic Science & Technology**
(ISOPE ARCTIC-2010) Symposium
- 1st Renewable Energy & Environment**
(ISOPE REES-2010) Symposium
- 2nd Frontier Energy Resources**
(ISOPE FERT-2010)
- 8th High-Performance Materials**
(ISOPE HPM-2010) Symposium
- 4th Strain-Based Design**
(ISOPE SBD-2010) Symposium
- 2nd Nanomaterials & Coating**
(ISOPE NANO-2010) Symposium

ISOPE-2010

Beijing, China, June 20–26

Technical Program

Refereed papers from **50** countries in **149** sessions and
6 plenary sessions
General Information, Reservations, Publication, Author
Index and Program Updates on www.isopec.org
Forms for Advance Registration and Venue Hotel:
Inside this program and on www.isopec.org

Organized by:

Technical Program Committee, ISOPE

Sponsored by:

International Society of Offshore and Polar Engineers (ISOPE)

China National Offshore Oil Corporation

with cooperating organizations (list inside)



ISOPE, P.O. Box 189
Cupertino, CA 95015-0189, USA
Fax: +1-650-254-2038
meetings@isopec.org; www.isopec.org

GENERAL INFORMATION

Further details are to be updated on www.isopec.org .



PLACE AND DATE: Beijing, China, June 20–26, 2010

All ISOPE-2010 Conference's technical events, tea breaks and registration will take place at:

China National Convention Center (CNCC)
No 7 Tianchen East Road, Chaoyang District
Beijing 100108, China
www.cnccchina.com

Located in the Beijing Olympic Square.

PARKING

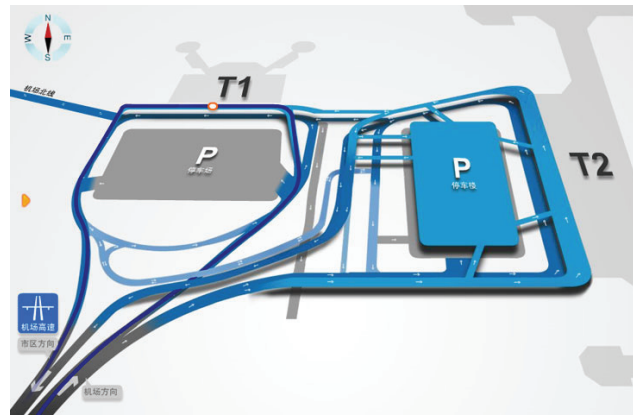
The China National Convention Center has over 784 secured underground public parking stalls and charges \$5.00/hour for guests, taxes included.

LANGUAGE

The language for the conference is English. No translation service will be arranged.

AIR TRAVEL

Many major airlines provide direct flights to Beijing Capital International Airport from centres in Asia, Europe, and North America – see <http://en.bcia.com.cn/> is located in Northeast Beijing and can be easily reached by bus, subway or taxi.



Terminals 1&2: http://en.bcia.com.cn/ecotraffic/map_t12.shtml

Terminal 3: http://en.bcia.com.cn/ecotraffic/map_t3.shtml

ARRIVAL GUIDE

1. Arrival

After getting off the airplane and entering the Terminal Building, you can go to the Luggage Claim Hall on the 1st floor along the airport passage of the 3rd floor and process the following procedures along the way.

2. Inspection and Quarantine

According to the requirement of inspection and quarantine authorities, passengers are required to fill out Entry Health Quarantine Declaration Card honestly. Passengers from epidemic-stricken area of H1N1 should present valid **vaccination certificate** of H1N1 to Inspection and Quarantine authorities

3. Immigration

Overseas passengers should possess valid passport and entry visa; Chinese passengers should possess valid passport. On arrival of a Chinese port, passengers should present filled-in Entry Registration Card, together with passport and visa to the immigration check post for inspection

4. Luggage (or Baggage) Claim

Luggage Claim Hall is located on the 1st floor where Luggage Claim carousel Screen is installed at its entrance .You can find out on which carousel your baggage is arriving.

- If you have many luggage, you can use luggage trolley for free or choose trolley service.
- In order to prevent your luggage from being mistakenly taken, please check your luggage tag/number carefully. For more information, Please ask for help at Luggage Inquiry Counter, or call :010-64599523,010-64599524, 010-64599529.

5. Customs

- All inward/outward passengers, except those who are exempted from Customs inspection and control in accordance with relevant regulations, or those under the age 16 who are traveling with accompanied adults, shall make a factual declaration to the Customs at airports of entry by completing a Declaration Form.
- Passengers who select “No” in all the items on the Declaration Form may choose to go through “Nothing-to-declare Channel”(“Green Channel”) for Customs procedures. Those who select “Yes” in the items on the Declaration Form shall provide in the corresponding spaces such details as details as description (type of currency), quantity (amount),model, etc., before choosing to go through “Goods-to-declare Channel”(“Red Channel”).

6. Leaving Airport

- You will enter the Greeting Hall after luggage claim, where you can meet your relatives and friends, ask for more information at Hotel Reception and Inquiry counter, International ATM machine, or exchange currency at bank.
- Walking out for the Greeting Hall, you can choose airport bus or taxi to leave the airport.

Ref to: <http://en.bcia.com.cn/harbor-guide/iarrrive.shtml>

HOTELS

CNCC Grand Hotel (4 star): ISOPE room rates from CNY 650 or RMB 650. [Download the file from www.isopec.org > Meetings > ISOPE-2010 > hotel reservation form.](#) Only a limited number of rooms are available at ISOPE room rates. *Reservations should be made **in March, 2010, though deadline is April 30.***

Other nearby hotels will be announced on www.isopec.org in next update:

AIRPORT TO CNCC Grand HOTEL in Olympic Square

Beijing Capital International Airport

After the Immigration and Customs Control, follow the Exit signs. Outside the airport you will find taxi and bus stops.

There are 3 terminals: Terminal 1, Terminal 2 and Terminal 3.

Taxi

A taxi ride is the most convenient when you carry large luggage. Taxis are readily available outside both the Domestic and International terminals and charge a metered rate based on time and distance traveled. The approximate fare **to CNCC Grand Hotel** is 110-130 RMB (inclusive of all taxes) under normal conditions.

You can share taxi ride with other ISOPE conference participants with **"ISOPE" baggage tag**.

Subway

Express Railway (the airport line) located at Terminal 2 and Terminal 3, take the line to SanYuanqiao Station, transfer to line 10, get to BeiTucheng Station, then transfer to line 8 to **Olympic Green** Station. *Ticket 25 RMB.*

Running Hours: 06:35 - 23:10

Interval: 15 minutes

Station Locations

Terminal 2: B2 of Parking Garage

Terminal 3: F2 of Parking Garage

From Olympic Green Station to CNCC Hotel

Olympic Green Station is only about 100 m away from the CNCC; You will see the buildings after they came out from the subway station, take Exit A----CNCC Exhibitions building, and CNCC Grand Hotel; Exit E----CNCC Conventions Center.

You can either take **taxi** (fare from Olympic Green: CNY10.00) or **walk**.

Airport Bus

The Airport Bus provides service to major hotel destinations in downtown Beijing. of the above routes, stations and schedule change, the messages will be issued by the Dispatch Centre of Beijing Capital International Airport. The two-way shuttle interval of Route 2 and 4 is 10 minutes. The two-way shuttle interval of Route 3 is 15 minutes. That won't exceed 30 minutes for other routes. The shuttle bus will start when it is fully occupied anytime and the tickets are available at all the stops.

◇ Take Line 5 (Zhongguancun) to Yayuncun (Anhui Bridge) station, and then take taxi to CNCC Grand Hotel or other nearby

hotels to be announced on www.iso-pe.org ;

Taxi fee from Anhui Bridge : CNY10.00

Ticket price: RMB 16 RMB(Yuan)

24-Hour Hotline:(86)10 - 6459 4375 (86)10 - 6459 4376

Ref to: <http://en.bcia.com.cn/traffic-manual/airport-bus.shtml>

CURRENCY EXCHANGE

Cash dispensers (ATMs) that accept all major credit/debit cards can be found at several locations in the airport, and at banks and retail areas throughout the city. Currency exchange services will charge either a flat fee for small denominations or a percentage of the amount exchanged; usually the exchange rate is more favourable at the banks. CNCC Grand Hotel has ATM machines.

TAX

Most purchases in China are subject to sales tax varying from 3%-45% of the purchase price **included in sales price** with no tax rebate. For more information call 010-12366 from within China; outside China call +86-10-12366.

ACCOMODATION

Find the CNCC Grand Hotel reservation form in the program or download the file from www.iso-pe.org > Meetings > ISOPE-2010 > hotel reservation form. You must use the Reservation Form for special ISOPE group rate and send by fax or e-mail to the Hotel.

Only a limited number of rooms are available at ISOPE room rates. *Reservations should be made in March, 2010, though deadline is April 30.*

CNCC Grand hotel is adjoined to the Beijing National Convention Center, the official venue for the Conference. Other nearby hotels are also not far from CNCC.

CITY TRANSPORTATION

Within the city it is best to take public transportation. Buses, Trains, Subway, and Light Rail Transit (LRT) run regularly and will take you almost everywhere in and around the city.

ELECTRICITY AND ADAPTER

Chinese appliances operate on **220 volts** in Beijing, which is different from the U.S. voltage. A **universal adaptor** is required for overseas electrical devices.

TIPPING

It is customary not to tip at any place in China. **Tips are already included** in the prices for restaurants, hotels, and retails.

HOURS OF OFFICE AND BUSINESS OPERATION

- * Offices in Beijing are usually open from 8:00 am to 5:00 pm.
- * Shops are usually open from 9:00 am to 9:00 pm.
- * Pharmacies keep similar hours to offices, with a few open 24 hours.
- * Banks are generally open 9:00 am to 4:00 pm Monday to Friday, with some banks open on Saturday.

SPOUSE PROGRAM

Update will be posted shortly. Sponsored by ISOPE, tickets will be issued to the spouses with ISOPE badge only, free of charge. It is first-come-first-served basis. **E-mail advance reservations** (Subject line "Spouse Program") to iso-pe-2@iso-pe.org.

WHAT TO SEE IN BEIJING

Beijing Municipality

As the capital of the People's Republic of China, Beijing is the nation's political, economic, cultural and educational center as well as being the most important center in China for international trade and communications. It has been the heart and soul of politics and society throughout its long history. By the time of the Warring States Period (476 BC - 221 BC), it was serving as the capital of the Yan Kingdom. Because of its role in the life and growth of China, there is an unequalled wealth available for travelers to discover as you explore Beijing's ancient past and enjoy its exciting 21st Century world. In 2008 when Beijing hosted the Olympic Games, Beijing showed the world something so special that everyone was awestruck by Beijing's latest accomplishments combined with its ancient history.

What to see

The magnificent Forbidden City is the world's largest and best-preserved imperial palace complex. Surrounded by a moat that is six meters deep and a ten-meter high wall are 9,999 rooms - just one room short of the number that ancient Chinese believed represented divine perfection. Once having entered the Forbidden City, visitors are transported to a spacious world of great luxury that had a culture of its own. For five centuries, this palace functioned as the administrative center of the country as well as being the pleasure "Tian'anmen Tower's home of the emperors and

empresses who were served by thousands of people. Walking along the corridors and through various rooms it becomes easy to understand the impact of the rulers who lived here and their isolation from the rest of Chinese life. Regardless of how much history you have read, or movies featuring the Forbidden City you have seen, the place itself is not to be missed by any Beijing visitor. (Self-guided audio tour tapes are available in several languages at the entrance.)

For a peaceful and interesting stroll, visit one of Beijing's many beautiful parks, such as Beihai Park, which was probably built by the Great Khan centuries earlier than the Forbidden City. This park was enjoyed by the various rulers of China for hundreds of years and features pavilions, architecturally interesting walkways, the 27-meter-long (about 88 feet) Nine Dragon Screen (built to scare off evil spirits), a jar that is the last remnant of the Khan's court that had been there, the Five Dragon Pavilion dating from the mid 1600's, and a large lake with an island in the middle. Another park that is a definite "must see" is the Summer Palace, a famous classic imperial garden with breathtaking beauty. Bold and generously designed, the northern gardens skillfully blend into the exquisite delicacy of the southern gardens. The Summer Palace holds a special place in the history of Chinese gardens. These are only two of the many majestic gardens in Beijing. Sometimes, you can find exceptional gardens within or surrounding Beijing's many ancient temples.

Beijing has many beautiful temples that at one time served as the focus for religious life. Temple of Heaven is the largest group of structures in the country dedicated to rituals that pay homage to heaven. This temple was built specifically for the worship of heaven and prayers for good harvests during the time of the Ming and Qing dynasties. There are two amazing acoustical spots here. On the top of the tri-leveled round altar (originally built in the 1500's) there is a spot where your words reverberate around you. You can easily imagine the power that temporal rulers felt as their prayers for abundance echoed as if they issued down from the heavens. The other is at the Echo Wall that partially encloses a circular courtyard that is 65 meters (213 feet) in diameter. Words whispered at one end travel along the wall and can be heard clearly by someone listening at the other end. The entire temple complex is a treasure of ancient Chinese architectural design and art. Symbolic shape combinations (the temples are round on square bases signifying heaven and earth) and various mystical numbers are the basis for much of the design work. The temple structures themselves are stunning works of art. All of this and more is set in the midst of a beautiful park.

There are many other fascinating temples in Beijing, among which are: the Yunju Temple, which houses the most stone inscriptions of Buddhist scriptures in the world, the White Cloud Taoist Temple, which is one of the oldest and still the most active of Taoist temples in Beijing, and the Temple of Confucius. Visiting these temples can help elucidate three primary philosophies that formed the basis for early Chinese life and culture. For example, much of traditional Chinese medicine's principles and theories were derived from the work of Taoist doctors and masters.

The largest city central square in the world, the solemn and respectful Tiananmen Square is not only the symbol of Beijing but also the symbol of China. This immense courtyard is the site of many historic events. The square is surrounded by a variety of significant edifices: Chinese Revolution History Museum, Mao Mausoleum, Great Hall of the People, the elegant and beautiful Tiananmen (Heavenly Peace Gate), and Qianmen (Front Gate). The daily flag ceremony at the square, performed at sunrise and sunset each day, is most exceptional and well-worth making time to view.

Zhong Nan Hai The Great Wall is one of the eight wonders of the world and is the only man-made structure that is visible from the moon. This immense wall was built to keep out invaders as well as to retain the inhabitants. It spans five provinces (6,700 km or 2,587 mi) from Shanhaiguan Pass in the east to Jiayuguan Pass in the west. Like a gigantic dragon, it winds up and down across deserts, grasslands and

mountains. Just outside Beijing, it is possible to climb a section of the Great Wall and enjoy a splendid panoramic view that you will remember for the rest of your life.

Other famous Beijing attractions include the Ming Tombs, the burial site of 13 ancient emperors; the Drum Tower built in the 1400's; Tiantan Park with its excellent Ming architectures; Fragrant Hills Park; the Ancient Observatory that dates back to the days of Kublai Khan; The Silk Market; Botanical Gardens; the Indian-designed Temple of Azure Clouds and many, many more wondrous places. Any reader of the classic The Dream of Red Mansions will want to visit Prince Gong's Mansion of the 18th Century, which is purported to be the model for mansion in the novel.

History

How can one city boast so many phenomenal places? Beijing's long and illustrious history starts approximately 500,000 years ago. It is here that the ancestors of modern Homo sapiens, Peking men, lived in caves. Records show that Beijing has been an inhabited city for more than three thousand years and has lived through invasions, devastating fires, dynasties, warlords, Anglo-French troops and has emerged each time as a strong and vibrant city. For more than 800 years, Beijing was a capital city - from the Yuan Dynasty to the Ming and Qing dynasties. Thirty-four emperors have lived and ruled in Beijing and it has been an important trading city from earliest days. Although now Beijing is modern, fashionable and full of 21st Century vitality, you can experience authentic Beijing life and become acquainted with "old Beijing" by exploring many tea houses, temple fares, Beijing's Hutong and Courtyard and enjoy the Peking Opera. Adding these to your Beijing tour, you will leave feeling in your heart a special appreciation for this ancient city that has truly seen it all and tells its story with matchless grace and beauty. China Silk Carpet Gallery

SIGHT SEEING AND TOUR PROGRAM

The program by a tour agent will be posted on www.isopec2010.org or www.isopec.org > **meetings** > **ISOPE-2010**. Contact the agent directly. You can also check with other tour agents on internet.

Neither ISOPE nor CNOOC is responsible or liable for the tour.

SPONSOR

Sponsor/host is CNOOC: Visit ISOPE-2010 Beijing website. www.isopec2010.org.



ADVANCE CONFERENCE REGISTRATION BY MAIL OR FAX (use the Registration Form)

Remember to send via **airmail or fax** the Advance Registration (*and Invoice*) Form in this Program (It can also be downloaded from www.isopec.org)

DEADLINE: Presenting Authors: March 24.
Non-Authors, non-presenting authors and co-authors: May 22.

In case one charges to a credit card via Fax, the **card number** should be **typed in bold face or written clearly** to be readable in the transmitted Fax copy. The ISOPE Fax number is **1-650-254-2038 USA**. Forms received **after May 22** will not be processed and will be returned to the senders for on-site registration with a **surcharge of US\$100**. Registrants will not be separately invoiced.

REGISTRATION CANCELLATIONS

Requests in writing for cancellation of registration received by **June 1, 2010** only will be granted a refund minus **US\$100** handling fee. No **refund** will be granted to **one “presenting” author** per paper, if the paper is already included in the proceedings. The registered **presenting author will receive** a proceedings CD-ROM.

REGISTRATION BADGE

Conference registration badges are required for admittance to all the conference activities, including the reception and banquet.

Advance Registration Fees: Deadline for the *presenting authors* is **March 24.**

US\$100 surcharge applies after **May 22 and for on-site registration fees.**

Category	Advance Registration Fee (US\$)*	
	Before <u>May 22</u>	
	2+days	1 day
ISOPE member	630	530
Author, Co-author, Session Chair, Co-Chair (non-ISOPE member)	680	580
Member of Coop. organizations	680	580
Non-member of ISOPE	760	660
New ISOPE member application (incl. 2010 membership fee and one year journal issues)	730	630
ISOPE Membership fee, 2010	100	100
ISOPE Member Student with Full-time 2010 ID	420	420
Non-member Student with Full-time 2010 ID	480	480
New ISOPE student member application (incl. 2009 membership fee and one year journal issues)	470	470
Spouse/Separate Banquet Ticket	110	110

* The **full Conference registration fee** (2 days or more) **includes** the conference reception, a conference banquet, tea breaks, and a **CD-ROM** of the **4,500**-pp. (est.) **4-volume** conference proceedings.

* The **1-day registration fee includes CD-ROM** of the **4-volume** conference proceedings and tea breaks.

ON-SITE CONFERENCE REGISTRATION: Foyer, 3F

Participants who miss the advance registration (before **May 22**) may register on site at the Conference Registration Desk, but there is US\$100 surcharge. The registration desk will be open during the following hours:

Sunday, June 20	15:00-18:00	Wednesday, June 23	08:00-15:00
Monday, June 21	07:30 -16:00	Thursday, June 24	08:00-13:00
Tuesday, June 22	08:00 -16:00		

ISOPE-2010 CONFERENCE PROCEEDINGS

A 4-volume conference proceedings on CD-ROM (ISBN **978-1-880653-77-7**; ISSN **1098-6189**) is included in all conference registration fees. For additional or separate orders, download the publications order form from www.isopec.org for post-conference order:

A **4-volume Conference Proceedings** in CD-ROM (**4,500 pp.** est.)
Mail, E-mail or Fax order \$290 (ISOPE Member \$240)

Mail or Fax Order from ISOPE, 495 North Whisman Road, Suite 300, Mountain View, California 94043-5711, USA: Fax **1-650-254-2038**.

Advance payment is required. MasterCard, VISA, or AMEX; international money order or U.S. bank checks in US Dollars *payable to ISOPE* will be accepted. Shipping and handling charges will be added (Download the Publication Order Information from www.isopec.org).

CONFERENCE RECEPTION

Sunday Ballroom, 1F

ANNUAL CONFERENCE BANQUET

Wednesday Ballroom, 1F

AUTHOR PRACTICE ROOM Individual session rooms

An overhead projector, power-point or LCD projector and screen are available during 08:00-17:00 (Monday - Thursday).

CHAIR/CO-CHAIR AND AUTHOR BRIEFING

The **session chairs and co-chairs** will be briefed at 07:00 each morning Foyer, 3F near the registration desk and will pick up session jacket for author briefings on the day of presentation. **Chairs and co-chairs** will also be emailed brief instructions in advance, including the manner of each session conduct and information on authors and presentation. **Presenting authors** go directly to their session room 30 minutes before the session.

INFORMATION - MESSAGE CENTER.

The information and message center is located in the registration area. One may contact ISOPE Conference Registration Desk at Foyer, 3F.

INTERNATIONAL PARTICIPANTS AND VISA APPLICATION

International authors, participants or attendees who need help (except financial) can contact: **ISOPE-2010 Secretariat, 495 North Whisman Road, Suite 300, Mountain View, California 94043-5711 USA. Fax: +1-650-254-2038; email: meetings@isope.org.**

Entry Visa. The authors and participants may be required to apply for an entry visa.

Visa application form. Get it from the Consulate Office of China in your country or click on <http://au.china-embassy.org/chn/lsfw/bgxz/P020070726305450319339.pdf>.

If the Consulate requires you to submit an **official letter of invitation**,

please contact COOEC, China (zhuxudan@mail.cooec.com.cn or

joyce.rain@hotmail.com) Fax: +86-22-66908166, CNOOC.

Sometimes **tourist visa** is faster and easier **especially for the accompanying family members** to obtain through your local travel agents. You may not need official letters of invitation to apply for tourist visa.

QUESTIONS ABOUT THE CONFERENCE?

Please e-mail, call or fax before **June 11** to: ISOPE, USA (email: meetings@isope.org; Tel: +1-650-254-1871; Fax: +1-650-254-2038), if you have any questions about the conference. Also, click on <http://www.isope.org>.

TAX DEDUCTIBILITY

Expenses of attending professional meetings such as the registration fee and cost of technical publications may be tax-deductible as ordinary expenses for U.S. citizens and some countries.

CLIMATE

The climate of Beijing varies season to season. During June, and July, the average daily temperature is around 25°C. Generally the rainy season may start in late June. However, plenty of fine days can still be expected.

AUTHOR INDEX AND SUBJECT INDEX

With the advancement of Find or Search function in PDF file, one can use Find or Search in the PDF file of the conference programs posted on www.isope.org.



ISOPE Publication Order Information

(Download from www.iso-pe.org for further information.)

International Journal of Offshore and Polar Engineers - Quarterly (March, June, September, December) (ISSN 1053-5381): Indexed by SCI-E and Engineering Index.

Editors: Jin S. Chung, R.M.W. Frederking, W. Koterayama, I. Langen.

Topics: *offshore engineering, ocean engineering, environment, offshore mechanics, polar (Arctic and Antarctic) engineering, advanced marine technology, materials and technology and energy.* **Yearly subscription rates:** US\$150. (Member; complimentary) and US\$100 per a set of annual back issues. US\$60 per issue.

Proceedings of the 1st (1990) Pacific/Asia Offshore Mechanics Symposium (PACOMS '90), Seoul, Korea, 24-28 June 1990. For a set of 3 volumes, (ISBN 0-9626104-0-2; LCCN 90-082039): approx. 1260 pp., US\$150 per set.

Proceedings of Special Offshore Symposium China (SOSC-94) /the 3rd (1994) Pacific/Asia Offshore Mechanics Symposium (PACOMS-94), Beijing, China, 16-18 April 1994. A single volume (ISBN 1-880653-15-X); 797 pp., US\$100.

Proceedings of the 4th (1996) ISOPE Pacific/Asia Offshore Mechanics Symposium (PACOMS-96), Pusan, Korea, October 31-November 2, 1996. A single volume (ISBN 978-1-880653-27-2; ISSN 1946-0031); 325 pp., US\$80 (ISOPE Member; \$60).

Proceedings of the 5th (2002) ISOPE Pacific/Asia Offshore Mechanics Symposium (PACOMS-2002), Daejeon, Korea, November 17-20, 2002. A single volume (hard copy and CD-Rom) (ISBN 978-1-880653-59-3; ISSN 1946-0031); 252 pp., US\$120 (ISOPE Member; \$80).

Proceedings of the 6th (2004) ISOPE Pacific/Asia Offshore Mechanics Symposium (PACOMS-2004), Vladivostok, Russia, September 12-16, 2004. A single volume (hard copy and CD-Rom) (ISBN 978-1-880653-63-0; ISSN 1946-004X); 299 pp., US\$100 (ISOPE Member; \$80).

Proceedings of the 7th (2006) Pacific/Asia Offshore Mechanics Symposium (ISOPE PACOMS-2006), Dalian, China, September 17-21, 2006. A single volume (CD-ROM) (ISBN 978-1-880653-67-8; ISSN 1946-004X); 357 pp., US\$100 (ISOPE Member; \$80).

Proceedings of the 8th (2008) Pacific/Asia Offshore Mechanics Symposium (PACOMS-2008), Bangkok, Thailand, November 17-21, 2006. A single volume (CD-ROM) (ISBN 978-1-880653-52-4; ISSN 1946-004X); 334 pp., US\$100 (ISOPE Member; \$80).

Proceedings of the 1st (1990) European Offshore Mechanics Symposium (EUROMS-90), Trondheim, Norway, 20-22 August 1990. A single volume: (ISBN 0-9626104-4-5; LCCN 90-084691); approx. 590 pp., US\$80. (Member; US\$60.)

Proceedings of the 2nd (1999) ISOPE European Offshore Mechanics Symposium (EUROMS-99): s (of Synopsis in Russian and English), Moscow, Russia, 7-9 June 1999. A single volume: (ISBN 1-880653-44-3); approx. 126 pp., US\$50. (Member; US\$40.)

Proceedings of the 1st (1995) ISOPE Ocean Mining Symposium, Tsukuba, Japan, November 21-22, 1995. A single volume (ISBN 1-880653-21-4, LCCN 95-77708): 238 pp., US\$100 (Member; US\$80.)

Proceedings of the 2nd (1997) ISOPE Ocean Mining Symposium, Seoul, Korea, November 24-26, 1997. A single volume (ISBN 1-880653-33-8, LCCN 97-74490): 201 pp., US\$100 (Member; US\$80.)

Proceedings of the 3rd (1999) ISOPE Ocean Mining Symposium, Goa, India, November 8-10, 1999. A single volume (ISBN 978-1-880653-45-6; ISSN 1946-0074):298 pp., US\$100 (Member; US\$80.)

Proceedings of the 4th (2001) ISOPE Ocean Mining Symposium, Szczecin, Poland, September 23-27, 2002. A single volume (ISBN 978-1-880653-56-2; ISSN 1946-0074): 208 pp., US\$100 (Member; US\$80.)

Proceedings of the 5th (2003) ISOPE Ocean Mining Symposium, Tsukuba, Japan, September 15–19, 2003. A single volume (hard copy and CD-Rom) (ISBN 978-1-880653-61-6; ISSN 1946-0074):256 pp., US\$120 (Member; US\$80.)

Proceedings of the 6th (2005) ISOPE Ocean Mining Symposium, Changsha, Hunan, China, October 9–13, 2005. A single volume (hard copy and CD-Rom) (ISBN 978-1-880653-65-4; ISSN 1946-0066):276 pp., US\$100 (Member; US\$80.)

Proceedings of the 7th (2007) ISOPE Ocean Mining Symposium, Lisbon, Portugal, July 1–6, 2007. A single volume (hard copy and CD-Rom) (ISBN 978-1-880653-69-2; ISSN 1946-0066):219 pp., US\$100 (Member; US\$80.)

Proceedings of the 8th (2009) ISOPE Ocean Mining Symposium, Chennai, India, September 20–24, 2009. A single volume (hard copy and CD-Rom) (ISBN 978-1-880653-75-3; ISSN 1946-0066):308 pp., US\$100 (Member; US\$80.)

First (2003) ISOPE Symposium on High-Performance Materials in Offshore Industry (HMOI), ISOPE HPM-2003, Honolulu, Hawaii, US, May 25-30, 2003: Published in Proceedings of the 13th (2003) International Offshore and Polar Engineering Conference (ISOPE 2003), Honolulu, Hawaii, USA, May 25-30, 2003. For 4-volumes set CD-Rom (ISBN 978-1-880653-60-9; ISSN 1098-6189 (Set):2,912 pp., \$220 (ISOPE Member; \$180).

Second (2004) ISOPE High-Performance Materials Symposium: Friction Stir Welding, ISOPE HPM-2004, Toulon, France, May 23-28, 2004: Published in Proceedings of the 14th (2004) International Offshore and Polar Engineering Conference (ISOPE 2004), Toulon, France, May 23-28, 2004. For 4-volumes set CD-Rom (ISBN 978-1-880653-62-3; ISSN 1098-6189 (Set): 3,160 pp., \$220 (ISOPE Member; \$180).

Third (2005) ISOPE High-Performance Materials Symposium: Advanced Welding, ISOPE HPM-2005, Seoul, Korea, June 19-24, 2005: Published in Proceedings of the 15th (2005) International Offshore and Polar Engineering Conference (ISOPE 2005), Seoul, Korea, June 19-24, 2005. For 4-volume set CD-Rom, (ISBN 978-1-880653-64-7; ISSN 1098-6189: 3,110 pp., \$220 (ISOPE Member; \$180).

Fourth (2006) ISOPE High-Performance Materials Symposium, ISOPE HPM-2006, San Francisco, California, USA, May 28–June 2, 2006: Published in Proceedings of the 16th (2006) International Offshore and Polar Engineering Conference (ISOPE-2006), San Francisco, California, USA, May 28–June 2, 2006. For 4-volume set *CD-Rom*, (ISBN 978-1-880653-66-1; ISSN 1098-6189: 2,704 pp.,\$220 (ISOPE Member; \$180).

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