



Second Circular

# EMECCR 2017

1st International Conference on Energy and Material Efficiency  
and CO<sub>2</sub> Reduction in the Steel Industry

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**Date** Wed 11 – Fri 13, October, 2017

**Venue** Kobe International Conference Center,  
Kobe, Japan  
<http://kobe-cc.jp/english/index.html>

**URL** <http://www.emecr2017.com>

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Organized by

The Iron and Steel Institute of Japan, ISIJ



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# EMECCR 2017

1st International Conference on Energy and Material Efficiency  
and CO<sub>2</sub> Reduction in the Steel Industry

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# Introduction

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## Introduction

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I would like to heartily welcome you to EMECR2017 that will be held in Kobe, Japan, in 2017 following on from the last fruitful meeting at ESEC2014 (European Steel Environment & Energy Congress), held in Teesside, UK, in 2014. The major themes of this conference will be energy efficiency and carbon dioxide (CO<sub>2</sub>) reduction, and also materials efficiency and product life cycles in the steel industry.

The main dilemma facing the steel industry is to keep a balance between improving environmental performance and maintaining cost competitiveness. There is also a need to ensure that the steel industry provides sustainable products which meet society's growing needs against a background of future resource constraints and the need to mitigate climate change. The steel industry is required to improve energy efficiency for meeting these climate change targets accompanied with CO<sub>2</sub> emission mitigation. The improvement is one of the major contributors for reducing operational costs as well as improving environmental performance. The tool of Life Cycle Assessment (LCA) is being used to demonstrate the potential of steel. By considering the environmental performance of steel products with LCA analysis, recycling of steel products makes them highly competitive in sustainability terms.

These are the key challenges to be addressed by this conference. This conference will showcase innovation and technology, provide details of the latest industry solutions to energy and environmental issues, and will demonstrate how the steel industry is meeting the many challenges that it is currently facing.

Takaiku Yamamoto, Prof. Dr.  
Conference Chair  
Kyoto University

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# Organizing Committee / International Scientific Committee



## Organizing Committee Members

### Organized by

The Iron and Steel Institute of Japan, ISIJ

### Conference Chair

YAMAMOTO, Takaiku (Kyoto University)

### Conference Co-Chair

KATO, Yukitaka (Tokyo Institute of Technology)

NOGAMI, Hiroshi (Tohoku University)

### Committee

AKIYAMA, Tomohiro (Hokkaido University)

DAIGO, Ichiro (The University of Tokyo)

HALADA, Kohmei (National Institute for Materials Science)

HARUNA, Yasushi (SANYO SPECIAL STEEL Co., Ltd.)

INOUE, Ryo (Akita University)

KASAI, Eiki (Tohoku University)

KUNITOMO, Kazuya (Kyushu University)

KUWAUCHI, Yuki  
(Nippon Steel & Sumitomo Metal Corporation)

MATSUMOTO, Akihiro  
(National Institute of Advanced Industrial Science and Technology)

MIKI, Yuji (JFE Steel Corporation)

MORITA, Kazuki (The University of Tokyo)

MURAKAMI, Taichi (Tohoku University)

NAGASAKA, Tetsuya (Tohoku University)

NAKAJIMA, Kenichi  
(National Institute for Environmental Studies, Japan)

NOGUCHI, Kei (NISSHIN STEEL CO., LTD)

OHNO, Ko-ichiro (Kyushu University)

SAITO, Koji (Nippon Steel & Sumitomo Metal Corporation)

SHIGAKI, Nobuyuki (JFE Steel Corporation)

SUMI, Ikuhiro (JFE Steel Corporation)

SUZUKI, Toshio (Daido Steel Co., Ltd.)

TANAKA, Mutsumi (Kobe Steel, LTD)

TANAKA, Toshihiro (Osaka University)

TUBONE, Akira (Aichi Steel Corporation)

UEDA, Shigeru (Tohoku University)

UENO, Hiromitsu  
(Nippon Steel & Sumitomo Metal Co., Chair of COURSE50)

WAKIMOTO, Shinya (The Iron and Steel Institute of Japan)

YAMASUE, Eiji (Ritsumeikan University)

## International Scientific Committee Members

AKIYAMA, Tomohiro (Hokkaido University)

BAJAY, Sergio Valdir (UNICAMP)

BIRAT, Jean-Pierre (IF Steelman)

BRIMACOMBE, Luis (Tata Steel)

ITO, Kimihisa (Waseda University)

KASAI, Eiki (Tohoku University)

LUENGEN, Hans Bodo (VDEh)

MATSUOKA, Saiji (JFE Steel Corp.)

MIYAKE, Toshiya (Kobe Steel, Ltd.)

MORITA, Kazuki (The University of Tokyo)

MURAKAMI, Hideki (Nippon Steel & Sumitomo Metal Corp.)

NOLDIN, Jose (Lhoist)

STEEPER, Mick (Primetals Technologies)

THACKRAY, Richard (The University of Sheffield)

TSUKIHASHI, Fumitaka (The University of Tokyo)

UENO, Hiromitsu (Nippon Steel & Sumitomo Metal Corp.)

YI, Sang-Ho (POSCO)

YIN, Ruiyu (Central Iron & Steel Research Institute)

## Corporating Organizations

Architectural Institute of Japan

Associação Brasileira de Metalurgia, Materiais e Mineração (ABM), Brazil

Association for Iron and Steel Technology (AIST), USA

Associazione Italiana di Metallurgia (AIM), Italy

The Austrian Society for Metallurgy and Materials (ASMET), Austria

The Chemical Society of Japan

The Chinese Society for Metals (CSM), China

Czech Metallurgical Society, Czech Republic

French Steel Federation (FFA), France

Hungarian Mining and Metallurgical Society (OMBKE), Hungary

The Institute of Life Cycle Assessment, Japan

JAPAN ASSOCIATION OF CORROSION CONTROL

Japan Bridge Association

The Japan Institute of Metals and Materials

The Japan Iron and Steel Federation

The Japan Research and development Center for Metals

Japan Science and Technology Agency

Japan Society of Civil Engineers

The Japan Society of Mechanical Engineers (JSME)

Japanese Society of Steel Construction

The Mining and Materials Processing Institute of Japan

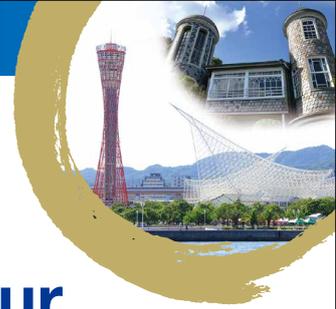
The Society of Chemical Engineers, Japan

Society of Environmental Science, Japan

Steel Institute VDEh, Germany

The Swedish Steel Producers Association (Jernkontoret), Sweden

UNESID Steel Companies Association, Spain



# Conference Schedule / Lecturers / Social Events / Plant Tour

## Conference Schedule

Day	Morning	Afternoon	Evening
<b>11th, Oct (Wednesday)</b>	Registration & Session	Session	Welcome Reception
<b>12th, Oct (Thursday)</b>	Session	Session	Banquet
<b>13th, Oct (Friday)</b>	Session	Plant Tour	—

## Lecturers

### Plenary Lecturers (In alphabetical order)

KITAGAWA, Susumu (Institute for Integrated Cell-Material Sciences, Kyoto University)

LÜNGEN, Hans Bodo (Steel Institute VDEh)

NOLDIN, Jose (Lhoist)

TSUCHIYA, Munehiko (New Energy and Industrial Technology Development Organization, NEDO)

YI, Sang-Ho (POSCO)

ZHANG, Chunxia (State Key Laboratory of Advanced Steel Processes & Products, Central Iron & Steel Research Institute (CISRI))

### Keynote Lecturers (In alphabetical order)

BIRAT, Jean-Pierre (IF Steelman)

BROADBENT, Clare (Worldsteel Association)

FUJIOKA, Keiko (Functional Fluids Ltd.)

GAUFFIN, Alicia (Materials Science and Engineering div. Applied Process Metallurgy, KTH Royal Institute of Technology)

KASAI, Eiki (Tohoku University)

KINSMAN, Nicole (International Molybdenum Association)

KUNITOMI, Kazuhiko (HTGR Hydrogen and Heat Application Research Center, Japan Atomic Energy Agency)

KUNITOMO, Kazuya (Material Science & Engineering, Kyushu University)

LEE, Joonho (Department of Material Science & Engineering, Korea University)

OHTAKE, Hisao (Phosphorus Atlas Research Institute, Waseda University)

ONO, Toru (The Japan Iron and Steel Federation/ Nippon Steel & Sumitomo Metal Corp.)

SHEN, Fengman (Northeastern University)

UENO, Hiromitsu (Nippon Steel & Sumitomo Metal Corporation)



# Conference Schedule / Lecturers / Social Events / Plant Tour

## Social Events

### Welcome Reception

Wednesday, October 11

All registered participants and their accompanying persons are invited to attend the Welcome Reception. A light meal and drinks will be served.

### Banquet

Thursday, October 12

**Venue: PORTOPIA HOTEL**

All registered participants and their accompanying persons are invited to attend the Banquet.

## Plant Tour

The plant tour in the afternoon of October 13th observes the Kobe Steel Works of Kobe Steel, LTD as KOBELCO.

[http://www.kobelco.co.jp/english/about\\_kobelco/outline/3minutes/index.html](http://www.kobelco.co.jp/english/about_kobelco/outline/3minutes/index.html)

The main visits regards Iron making process and Steel making process, Independence power producer plant.



Complete view of Kobe Steel Work



Blast Furnace



Independence power producer plant

In addition, we perform the visit of “Takenaka Carpentry Tools Museum” that attracted Japanese building culture based on Iron and Steel making manufacturing.

The Takenaka Carpentry Tools Museum was opened in 1984 in Nakayamate, Kobe, as the only museum of carpentry tools in Japan, with the objective to collect and conserve such disappearing tools as a cultural heritage, and to pass them on to the next generation through research and exhibitions.

More than 30,500 pieces of materials have been collected so far. We have been involved not only in conserving remarkable tools from the past, but also in holding diverse events such as exhibitions, lectures, seminars, classes outside of the museum, and workshops, to convey the skills, wisdom, and spirit of the people who make masterful use of tools, as well as the resulting architecture and the culture of wood that surrounds it.





# Topics / Key Dates

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## Topics

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1. Energy Efficiency and CO<sub>2</sub> Reduction - how the steel industry can contribute to a low carbon economy, including developments such as COURSE 50, ULCOS, AISI CO<sub>2</sub>, biological systems, carbon utilization and energy efficiency.

*Keywords: energy management, process control, waste heat recovery, process developments, ironmaking, steelmaking, carbon capture and utilization, high-temperature processes, industrial symbiosis*

2. Material Efficiency - optimizing raw material use and through-process yield, deploying integrated waste management and adopting industrial symbiosis towards zero waste operations.

*Keywords: material recovery and recycling, waste reduction, raw materials, byproducts, processing and waste optimization*

3. Product Life Cycles - demonstrating the key role of steel products in a sustainable society through deployment of LCA and life cycle thinking principles early in the product design.

*Keywords: LCA, sustainability, energy efficiency, material recycling, CO<sub>2</sub> emission mitigation, process developments, emission impact and measurement*

## Session Themes

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1. Ironmaking Resources and Preparation Process
2. Blast Furnace Route for Future Ironmaking
3. Thermodynamics and process technology for sustainable and efficient steel refining and recycling
4. COURSE50
5. Life cycle social value and environmental impacts
6. Behavior of accompanied element in steel cycle
7. Creating social value beyond steel industry
8. Thermal Energy Utilization
9. Carbon and material recycling
10. Gas separation by PCPs/MOFs for the Steel Industry
11. Phosphorus Concentration and Recovery from Steel-making Slag
12. Others

## Key Dates

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- Abstract submission: Tuesday, 28th February 2017
- Proceedings submission: Friday, 30th June 2017 (for inclusion into the proceedings)
- Online Early-bird Registration: Monday, 31st July 2017
- Online Regular Registration: Friday, 15th September 2017



# Call for Papers

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**Abstract submission: Tuesday, 28th February 2017**

**Notification of Abstract Result: Friday, 28th April 2017**

**Proceedings submission: Friday, 30th June 2017 (for inclusion into the proceedings)**

Participants wishing to make a presentation on the results of their recent research are cordially invited to submit up to a maximum of 300 words abstract in English, by no later than Tuesday, 28th February 2017 via the online EMECR2017 conference website.

Authors of accepted papers will be notified by e-mail by Friday, 28th April 2017, with information on the format and typing instructions for the Proceedings.

## Abstract Submission Instructions

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Submission is only accepted via the online EMECR2017 conference website.

**Only one Abstract per Presenter is accepted for submission.**

No fax and e-mail submission are accepted.

Please fill in the online submission form and submit the abstract with up to 6 Keywords.

Abstract should be written not exceeding 300 words. You are requested to choose the Topics from the listed below that are most applicable to your abstract theme. After submission, you will receive an automatic submission number in return by e-mail when the submission succeeds.

1. Ironmaking Resources and Preparation Process
2. Blast Furnace Route for Future Ironmaking
3. Thermodynamics and process technology for sustainable and efficient steel refining and recycling
4. COURSE50
5. Life cycle social value and environmental impacts
6. Behavior of accompanied element in steel cycle
7. Creating social value beyond steel industry
8. Thermal Energy Utilization
9. Carbon and material recycling
10. Gas separation by PCPs/MOFs for the Steel Industry
11. Phosphorus Concentration and Recovery from Steel-making Slag
12. Others

Proceedings submission instruction will be notified on the website once ready.

## Type of Presentation

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Either Oral or Poster presentations are accepted. However, the Program Committee will make the final decision.



# Registration / Accommodation

## Registration

**Early-bird Registration: Monday, 31st July 2017**

**Regular Registration: Friday, 15th September, 2017**

## Registration Fees

	Online Early Registration until July 31, 2017	Online Regular Registration until September 15, 2017	Onsite Registration
<b>Regular participant</b>	JPY 80,000	JPY 90,000	JPY 100,000
<b>Student</b>	JPY 45,000	JPY 50,000	JPY 55,000
<b>Accompanying Person</b>	JPY 35,000		
<b>Plant Tour</b>	JPY 8,000 (Tentative)		
<b>Documents for Visa acquisition</b>	JPY 10,000		

- All participants are subject to register online in advance or on-site at the registration desk at the venue.
- All presenters are required to register for Early registration in order to make a presentation and for the paper to be included in the Proceedings.
- To qualify for the Online Early registration, the application must be received by the Registration Office and payment completed by no later than Monday, 31st July 2017, 15:00 JST.
- Students are requested to show their Student ID card at the onsite registration desk.

## Entitlement

Registration fee for Regular Participant and Student include:

Session participation, Conference Kit, Welcome Reception, Coffee Breaks, Lunch, Banquet

Registration fee for Accompanying Person include:

Welcome Reception, Coffee Breaks, Banquet

## Payment Methods

After registering through this website, all payments must be made in Japanese yen by credit card or by bank transfer.



## Registration / Accommodation

### Credit Card

Payments are accepted only through VISA and Master Card.

Payment will be made in a single lump-sum.

### Bank Transfer

Bank information will be available on the website when the registration starts.

Please remit by Monday, 31st July 2017, 15:00 JST to qualify for early registration.

Registrants are responsible for all bank transfer charges.

Please input the 4-digit Registration Number when you are making the transfer.

### Confirmation and Receipt

The Pre-Confirmation e-mail bearing your registration number and details will be sent to you after your online registration is complete.

The Confirmation e-mail will be sent to you after the payment has been confirmed.

- \* If you do not receive a confirmation e-mail from the Registration Office within 1 month from the above indication, please email the Registration Office (emecr2017-reg@issjp.com).
- \* The confirmation e-mail should be retained and presented at the registration desk at the conference venue to receive your conference kit and receipt.
- \* Receipt of your payment will be issued on the day of the conference addressed to the applicant's name as registered.
- \* A request for changes in the registration details should reach the Registration Office (emecr2017-reg@issjp.com) by no later than Friday, 15th September, 2017.

### Cancellation and Refunds

Cancellation Policy: No refund after payment.

### Accommodation

All participants are requested to book their accommodation in Kobe by themselves. EMECR2017 Organizing Committee or Secretariat Office will not arrange accommodation for the participants. Please enquire at your favorite online hotel-booking page or travel agency.

Some hotels in the vicinity of the conference venue are listed below for your reference.

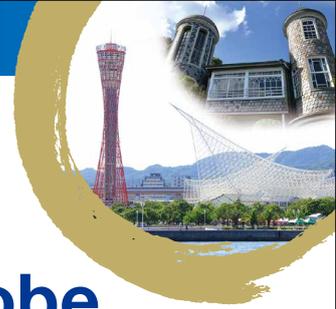
Please contact directly to the hotel you would like to stay at. Please note that the Organizing Committee or Secretariat Office has no special contract with these hotels and are not responsible for participants' hotel reservation.

#### Hotels on the Port Island:

Kobe Portopia Hotel
HOTEL PEARL CITY KOBE
ARISTON HOTEL KOBE

#### Hotels on the Downtown Kobe:

ANA CROWNE PLAZA KOBE
Hotel Okura KOBE
Sheraton KOBE BAY HOTEL & TOWERS
Sannomiya Terminal Hotel
Green Hill Hotel Kobe (Japanese website only)
Seaside Hotel MAIKO VILLA KOBE
UNION HOTEL (Japanese website only)
KOBE SANNOMIYA TOKYU HOTEL
KOBE MERIKEN PARK ORIENTAL HOTEL
Kobe Plaza Hotel (Japanese website only)
Daiwa Roynet Hotel Kobe-Sannomiya
Hotel Monterey Kobe



# Conference Venue / Access to Kobe

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## Basic Information of Kobe

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Kobe blessed with nature beauty such as Mt. Rokko and Seto Inland Sea is known as the gourmet street (Kobe beef, Nada Japanese sake, wine and sweets) , as well as the fashion street with the sophisticated image. This city is located almost in the center in Japan.

Kobe is known as a city having a unique style with the exotic atmosphere in Japan, which has been affected by the foreign cultures and flourished as the international port since old days. Also it boasts the Rokko Mountains richly endowed with nature and has flourished as the hot spring street such as Arima since old days.

Arima has plenty places of see which convey good old days in Japan and Kobe is positioned as one of the most popular sightseeing cities.

## Access to Kobe

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**WHERE IN JAPAN:** Kobe is located in Hyogo Prefecture, one of several prefectures in the mid-west of Japan that, together, are known as the 'Kansai Region'. This is Japan's premier tourism area for overseas visitors making Kobe an ideal base city for visiting world heritage sites, both to the east and to the west. The Port of Kobe and its man-made islands are located on the north shore of the Osaka Bay.

**EASY ACCESS:** As a port city, built on a history of transportation, and with its own airport and Shinkansen station (Shin-Kobe), Kobe offers easy access for both domestic and overseas travelers.

**CONVENTION VENUES:** Closer to the airport than any other convention centers in Japan! Kobe Convention Center (the International Conference Center, International Exhibition Halls and other key venues) are located on Port Island, about 10 minutes from downtown Kobe (Sannomiya) and only 8 minutes from Kobe Airport.



## Conference Venue / Access to Kobe

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### Access Details

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#### International Flight (Arriving Kansai International Airport)

Kansai International Airport (KIX) is the closest international gateway for Kobe and located around the Osaka Bay along a fast coastal highway. To transfer from KIX to Kobe:

- Transfer by Taxi: About 70 minutes and approx. 23,000 Yen (KIX to downtown Kobe, Sannomiya).
- Transfer by Limousine Bus: 65 minutes and 1,950 Yen (KIX to downtown Kobe, Sannomiya) (Operations every 10~20 minutes between 06:20 ~ 23:00).
- Transfer by Bay Shuttle Ferry: 30 minutes and 1,850 Yen (KIX to Kobe Marine Air) (Operations every 45~60 minutes between 07:05 ~ 21:50). The KIX ferry dock is a 6-7 minutes free bus transfer from the airport terminal.

#### International Flight (Arriving Narita Airport)

- Transfer by Domestic Air (Narita to Osaka Itami Airport): Narita is an international airport with some domestic flights to Osaka Itami Airport. Flight time between Narita and Osaka Itami is about 60 minutes.
- Transfer by Domestic Air (Haneda to Kobe Airport): Narita arrivals should first transfer to Tokyo's domestic airport Haneda for flights to Kobe. Bus transfers between Narita and Haneda take 75 minutes and cost 3,100 Yen. Flight time between Haneda and Kobe is about 60 minutes. (There are also flights to Osaka Itami if Kobe flights are full).
- Domestic Rail Transfer: See below for Shinkansen transfers from Tokyo to Kobe. Trains from Narita to Tokyo (Shinkansen) Station take about 60 minutes and cost approx. 3,200 Yen (by the Narita Express train). Buses from Narita to Tokyo take 80~110 minutes (depending on traffic conditions) and cost 3,100 Yen.

#### International Flight (Arriving Nagoya Centrair)

Nagoya's international airport (Central Japan) is called "Centrair".

- Transfer by train: For Kobe, first take a train (Meitetsu Tokoname Line) to Meitetsu Nagoya Station which takes about 30 minutes and costs 870 Yen. Then cross over to JR Nagoya Station (about 5 min. walk). Shinkansen trains to Shin-Kobe take about 70 minutes and cost approx. 8,300 Yen.

#### International Flight (Arriving Kobe Airport)

Location of Kobe Airport / Marine Air Island: Kobe Airport connects by road or rail to downtown Kobe (Sannomiya) through adjacent Port Island and its Convention Center.

- Transfer by Port Liner (Automated Guideway Transit): 18 minutes and 330 Yen to downtown Kobe 'Sannomiya' or 8 minutes and 250 Yen to Port Island convention hotels.
- Transfer by Taxi: Approx. 20 minutes and approx. 2,700 Yen to downtown or 10 minutes and approx. 1,700 Yen to hotels on Port Island.

#### Domestic Flight (Arriving Osaka Itami)

- Transfer by Taxi: Approx. 30 minutes and approx. 12,000 Yen (to downtown Kobe, Sannomiya) or 50 minutes and approx. 15,000 Yen directly to hotels on Port Island.
- Transfer by Limousine Bus: Bound for Sannomiya Station this bus takes 40 minutes and costs 1,050 Yen with operations every 15~30 minutes.

#### JR Shinkansen (Bullet) Train (Arriving at Shin-Kobe Station)

Bullet Trains to Shin-Kobe from Tokyo take about 2 hrs 50 minutes and cost approx. 16,000 Yen. Trains run about every 20 minutes. The last train bound for Kobe is at 20:50 (arriving 23:38) the first at 06:00 am. From Nagoya trains take 70 minutes and cost about 8,300 Yen. From Kyoto, about 30 minutes, costing about 3,700 Yen.

- Transfer by Taxi: 5 minutes and 700 Yen (to downtown Kobe, Sannomiya).
- Transfer by City Subway: 2 minutes and 210 Yen (to downtown Kobe, Sannomiya).



# General Information

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## Passport and Visa

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A valid passport is required to enter Japan. Participants from certain countries may be required to obtain a visa to enter Japan. Visa applications need to be made at least three months before the symposium. If you are uncertain about your requirements, please consult your nearest Japanese Embassy or Consulate, or visit the website of the Ministry of Foreign Affairs of Japan.

## Climate and Clothing

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During October, the average temperature in Kobe is around 16-23°C (60-73°F).

## Currency

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Only Japanese Yen is acceptable at regular store and restaurants. Foreign currency or traveler's checks can be changed into Japanese yen (¥) at major banks, hotels, and airports.

## Credit Cards

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Credit cards are widely accepted. Commonly recognized cards include Visa, MasterCard, and American Express.

## Tipping

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There is no custom of tipping anywhere in Japan, even at hotels and restaurants. On certain occasions, however, a service charge is added to the bill.

## Electrical Appliances

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The voltage in Japan is 100 - 110 volts for electrical appliances. Electrical sockets usually accept only two-pronged (vertical) plugs.

## Special Requirements

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Please give details of any special diet or disability assistance required on your registration form.

## Insurance

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The organizer cannot accept responsibility for accidents which might occur. It is recommended that participants take out adequate medical, travel and personal insurance prior to the commencement of travel.



EMECR2017 Secretariat  
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