



*Joint European Summer School on Fuel Cell,
Electrolyser, and Battery Technologies*

JESS 2014

21 – 27 September 2014

Pearl Beach Hotel, Rethymno, Greece



INTRODUCTION

The Joint European Summer School JESS 2014 will be held in the beautiful city of Rethymno from 21 to 27 September 2014. Once again it will provide highly condensed high level courses on selected topics.

The increase in energy production from renewable sources creates a demand for energy storage technologies. Storage and conversion can be accomplished electrochemically, in batteries or chemically through electrolysis and fuel cells. Therefore, these technologies are predestined to play a major role in the energy production infra-structure of the near future.

During the Summer School, the main focus will be on the technological aspects. Starting from the fundamental principles of electrochemistry and thermodynamics, the entire spectrum of materials, design and balance of plant will be covered both from an engineering point of view as well as from a modelling perspective. The technological courses will be augmented by more general lectures on energy policies and socio-economics.

In addition to the lectures, the participants will be asked to join in student projects where the content of the lectures can be applied to a case study to be presented at the end of the week.

The Summer School targets an audience of students and young professionals within the fields of fuel cells, hydrogen production and batteries. The lectures are designed for MSc-students, PhD-students, and Post-Doctoral researchers. More experienced researchers and engineers wishing to review the technologies addressed and expand their knowledge, for instance, to possibly suit a newly acquired position, will greatly benefit from attending. The topical content is tailored to the needs of a diverse audience: newcomers to the field, experienced students, and, young professionals working at the forefront of fuel cell and battery applications.

The school draws on the knowledge and expertise of a group of lecturers currently working at the leading edge of fuel cell, hydrogen and battery research and development in Europe and coming from universities, national research centres and industry.

Informal networking is a key element of science and scientific work in general. The Joint European Summer School on Fuel Cell, Electrolyser and Battery Technologies offers ample opportunity for networking between young professionals and eminent scientists. Students are given a mini-project to work on in small teams and asked to give a short introduction to themselves and the research work they are doing (or expect to be doing).

CERTIFICATE OF ATTENDANCE

A Certificate of Attendance shall be issued to all students of the Joint European Summer School on Fuel Cell, Electrolyser and Battery Technologies. This Certificate of Attendance can be used for acquiring CPD points. ECTS points are offered through DTU.

ORGANISING COMMITTEE

Prof. Rüdiger-A. Eichel (Forschungszentrum Jülich, Germany)
Prof Søren Linderøth (DTU Energy Conversion, Denmark)
Prof Robert Steinberger-Wilckens (U Birmingham, United Kingdom)

LOCATION & VENUE

The city of Rethymno is a small city which preserves a vivid medieval-renaissance color. The old, but exceptionally preserved city center is located beneath the walls of its sleepless

guard, the Venetian Fortezza fortress. The coastline of the Municipality of Rethymno is characterized by the beautiful sandy beach, the clean sea, the Venetian port, the picturesque alleys and the openhearted citizens.

The hotel hosting the school is situated at the end of the famous Rethymno beach promenade, overlooking the Mediterranean sea and within walking distance (2,2 km - 1,3 miles) of the attractions and activities in the heart of the town. All rooms have individual controlled A/C and internet access. More details can be found at <http://www.pearlhotels.gr/>. The distance from Heraklion airport is 75 km (approx 1 hour bus drive) and from Chania airport 65 km (approx 1 hour bus drive).

Participants wishing to arrive early or stay longer should make their own arrangements with our contact and cooperating partner: Panhellas Tourism & Congress (**Mrs Manuela Drape Stathoglou**, Mail: manuela@panhellas.gr, Tel: **0030 2810 300847**, Fax: **0030 2810 300848**).

CORRESPONDENCE

Student registration and financial matters – JESS@fz-juelich.de

Phone +49 2461 61-2244, Fax +49 2461 61-9550

Lecturers/other information - jo.mertens@fz-juelich.de, Phone +49 2461 61-6706

PARTICIPATION FEE

To register, fill in the form attached at the end of this document. The registration fee amounts to 1.280,- € and covers tuition fees, accommodation in single room (double room occupancy = 1.150,- €) from 21 to 27 Sept, full board, banquet and excursion.

Deadline for registration: **31 August 2014**.

CANCELLATION POLICY

To cancel your registration with JESS, send an email stating your intent to JESS@fz-juelich.de. Refunds will be subject to a cancellation fee. If your request arrives by 27 August 2014, the registration fee will be refunded after the school applying a cancellation fee of 350,00 € of the processed registration fee. After 27 August 2014, your request will not be processed.

To cancel any additional services booked with Panhellas (see below), please direct your request to Panhellas directly at the address(es) shown.

LIABILITY

The conference secretariat and organizers cannot accept liability for personal accidents, loss of or damage to private property of participants and/or accompanying persons, either during, or directly arising from the JESS2014. Participants should make their own arrangements with respect to health and travel insurance.

For updates and information, please go to our web site:

http://www.fz-juelich.de/iek/iek-9/EN/Aktuelles/aktuelles_node.html

| | | Joint lectures | | |
|-----------|-----------------------------|--|---|--|
| Module 1 | Introduction to SOFC / SOEC | | Introduction to LT Fuel Cells and Electrolysers | Introduction to Batteries |
| Module 2 | | | | |
| Module 3 | | | | |
| Module 4 | | | | |
| Sunday | 21 Sept 2014 | | | |
| 19:00 | Welcome Drink | | | |
| Monday | 22 Sept 2014 | | | |
| 08:30 | 09:00 | Welcome and General Introduction | | |
| 09:00 | 09:45 | Sustainable and Renewable Energy Future | | Søren Linderoth (DTU), Rüdiger Eichel (FZJ) |
| 09:45 | 10:00 | coffee break | coffee break | coffee break |
| 10:00 | 11:15 | Introduction to Batteries | | Rüdiger-A. Eichel (FZJ) |
| 11:15 | 11:30 | coffee break | coffee break | coffee break |
| 11:30 | 12:45 | Introduction to Fuel Cells and Electrolysis | | Robert Steinberger-Wilckens (UBham) |
| 13:00 | 14:00 | lunch | | |
| 16:00 | 17:30 | A basic introduction to Electrochemistry and Thermodynamics | | Neil Rees (UBham) |
| 17:30 | 18:00 | coffee break | coffee break | coffee break |
| 18:00 | 19:30 | A basic introduction to Solid State Chemistry & Ionics | | Hans-Dieter Wiemhöfer (UMünster) |
| 19:30 | 19:45 | Introduction to the Students' Project | | Robert Steinberger-Wilckens (UBham) |
| 19:45 | 21:15 | welcome reception / dinner | | |
| 21:15 | 22:00 | Student's Presentations I | | Søren Linderoth (DTU) |
| Tuesday | 23 Sept 2014 | | | |
| 08:30 | 09:45 | Electrolyte materials for SOFC / SOEC | Alan Atkinson (IC) | Electrolyte materials for LT Fuel Cells and Electrolysers |
| 09:45 | 10:00 | coffee break | | Lars Cleemann (DTU) |
| 10:00 | 11:15 | Anode materials for SOFC / SOEC | Alan Atkinson (IC) | Anode materials for LT Fuel Cells and Electrolysers |
| 11:15 | 11:30 | coffee break | | Lars Cleemann (DTU) |
| 11:30 | 12:45 | Cathode materials for SOFC / SOEC | Alan Atkinson (IC) | Cathode materials for LT Fuel Cells and Electrolysers |
| | | | | Lars Cleemann (DTU) |
| 13:00 | 14:00 | lunch | | |
| 16:00 | 17:15 | Characterisation methods for fuel cell, electrolyser and battery materials | | Neil Rees (UBham) |
| 17:15 | 17:30 | coffee break | coffee break | coffee break |
| 17:30 | 18:15 | Exercise on Electrochemistry and Thermodynamics | | Neil Rees (UBham) |
| 18:15 | 18:30 | coffee break | coffee break | coffee break |
| 18:30 | 19:45 | Energy Storage - The Systems Perspective | | Jürgen-Fr. Hake (FZJ) |
| 20:00 | 21:00 | dinner | | |
| 21:15 | 22:00 | Student's Presentations II | | Søren Linderoth (DTU) |
| Wednesday | 24 Sept 2014 | | | |
| 08:30 | 09:45 | Cell and Stack designs for SOFC / SOEC | Bert de Haart (FZJ) | Cell and Stack designs for LT Fuel Cells and Electrolysers |
| 09:45 | 10:00 | coffee break | | Marcelo Carmo (FZJ) |
| 10:00 | 11:15 | Manufacturing of SOFC / SOEC | Bert de Haart (FZJ) | Manufacturing of LT Fuel Cells and Electrolysers |
| 11:15 | 11:30 | coffee break | | Marcelo Carmo (FZJ) |
| 11:30 | 12:45 | Exercise on materials / design | Bert de Haart and Alan Atkinson | Exercise on materials / design |
| | | | | Marcelo Carmo (FZJ) |
| 13:00 | 14:00 | lunch | | |
| 15:00 | 20:45 | Excursion | | |
| 21:00 | 22:00 | dinner | | |
| Thursday | 25 Sept 2014 | | | |
| 08:30 | 09:45 | Atomistic Modelling in fuel cell, electrolyser and battery research | | Tejs Vegge (DTU) |
| 09:45 | 10:00 | coffee break | coffee break | coffee break |
| 10:00 | 11:15 | System technology for SOFC | Bert de Haart (FZJ) | System technology for LT Fuel Cells |
| 11:15 | 11:30 | coffee break | | Robert Steinberger-Wilckens (UBham) |
| 11:30 | 12:45 | System technology for SOEC | Robert Steinberger-Wilckens (UBham) | System technology for LT Electrolysers |
| | | | | Marcelo Carmo (FZJ) |
| 13:00 | 14:00 | lunch | | |
| 16:00 | 17:00 | Degradation in SOFC / SOEC | Anke Hagen (DTU) | Degradation in LT Fuel Cells and Electrolysers |
| 17:00 | 17:15 | coffee break | | Jens Oluf Jensen (DTU) |
| 17:15 | 18:30 | Exercise on degradation | Anke Hagen (DTU) | Exercise on degradation |
| 18:30 | 18:45 | coffee break | | Jens Oluf Jensen (DTU) |
| 18:45 | 19:45 | (to be announced) | | Jürgen-Fr. Hake (FZJ) |
| 20:00 | 21:00 | dinner | | |
| Friday | 26 Sept 2014 | | | |
| 08:30 | 09:45 | New trends in SOFC / SOEC | Anke Hagen (DTU)2: | New trends in LT Fuel Cells and Electrolysers |
| 09:45 | 10:00 | coffee break | | Jens Oluf Jensen (DTU) |
| 10:00 | 11:15 | Power to Gas, Fuels and Chemicals I | | R. Dittmeier (KIT) |
| 11:15 | 11:30 | coffee break | | R. Dittmeier (KIT) |
| 11:30 | 12:45 | Power to Gas, Fuels and Chemicals II | | R. Dittmeier (KIT) |
| 13:00 | 14:00 | lunch | | |
| 16:00 | 17:00 | beyond Lithium - resource-efficient batteries | | Tejs Vegge (DTU) |
| 17:00 | 17:15 | coffee break | | coffee break |
| 17:15 | 18:45 | Students' projects presentations | | Robert Steinberger-Wilckens (UBham) |
| 18:45 | 19:00 | coffee break | | coffee break |
| 19:00 | 19:30 | Farewell | | Robert Steinberger-Wilckens (UBham) |
| 20:30 | open | Gala dinner | | |

Joint European Summer School for Fuel Cell, Electrolyser, and Battery Technologies

I would like to book the following module:

Solid Oxide Fuel Cells

LTFC / Electrolysers

Batteries

Pearl Beach Hotel
21 – 27 September 2014, Rethymno, Greece

Deadline for registration: **31st August 2014**

| | |
|--|----------------------|
| Title | |
| First name | |
| Last name | |
| Gender | Male Female |
| University/Institution/Company Name | |
| Street / P.O. Box | |
| Postal code | |
| Town/City | |
| Country | |
| Phone | |
| Fax | |
| E-mail : | |
| Heraklion arrival date and time | |
| Heraklion departure date and time | |
| Please note any special dietary requirements, disabilities etc. that we may need to know about | |

PLEASE RETURN BY E-MAIL OR FAX TO

Mrs. Chantal Hake at JESS@fz-juelich.de or Fax +49 2461 61 9550
You will then receive a confirmation and an invoice for the enrollment fee.

Please fill in the form and send to:

PANHELLAS TOURISM & CONGRESS

Pediados 3, 71306 Heraklion, Crete, Greece
Tel. +30 2810 300847 Fax +30 2810 300848
E-mail: manuela@panhellas.gr

Registration Form for **additional overnights** of participants of the

**Joint European Summer School on Fuel Cell,
Electrolyser, and Battery Technologies
JESS 2014
21-27.09.2014
Crete - Greece**

**Note: The accommodation for JESS 2014 is included in the registration fee between
21.09-27.09.2014 (6 nights)**

Additional nights can be booked before or after the above mentioned dates.

PLEASE FILL IN ALL BELOW REQUESTED DETAILS

Name _____ First Name _____
Address _____ City _____ Country _____
Tel _____ Fax _____
Email _____

Please book _____ additional night/s for the period
from _____ to _____ at Hotel _____
(prices see below)

| | PRICES per room per day | |
|---|-------------------------|-------------|
| | Double room | Single room |
| Sentido Pearl Beach 4* (Including breakfast, lunch and dinner + wine during meals) | € 165.00 | € 115.00 |
| Sentido Aegean Pearl 5* (Including breakfast, lunch and dinner + wine during meals) | € 195.00 | € 130.00 |

If you prefer to stay in the Heraklion area for additional nights, we would like to suggest the following hotels:

| | PRICES per room per day | |
|---|-------------------------|-------------|
| | Double room | Single room |
| Hotel Marin Dream 3*** (www.marinhotel.gr) Including overnight and breakfast | € 75.00 | € 62.00 |
| Boutique Hotel Lato 3***+ (www.lato.gr) Including overnight and breakfast | € 87.00 | € 74.00 |

Total Rate for the additional accommodation: Euro _____

Private Transfers can be arranged:

a. from Heraklion Airport to Sentido Hotels
b. from Sentido Hotels to Heraklion airport
for the rate of Euro 90,00 per taxi per way (max. 3 persons)

c. from Chania Airport to Sentido Hotels
d. from Sentido Hotels to Chania airport
for the rate of Euro 80,00 per taxi per way (max. 3 persons)

Private Transfer Yes No

Date: _____ Airport: _____ Flight Number: _____ Arrival Time: _____
Date: _____ Airport: _____ Flight Number: _____ Departure Time: _____

Special Notes: _____

If you wish to rent a car, please find below our special car rental rates:

| Group | Car Type | 3 Days | 4 Days | 5 Days | 6-7 Days | Extra Day |
|--------|--|--------|--------|--------|----------|-----------|
| B | Hyundai Atos or similar A/C | 117,70 | 161,70 | 182,60 | 219,00 | 31,00 |
| C | Fiat Punto/Peugeot 206 A/C | 129,80 | 168,30 | 195,80 | 228,00 | 32,00 |
| E.H | Hyundai Accent | 136,40 | 174,90 | 210,10 | 267,30 | 35,65 |
| E.J | Suzuki Jeep Jimmy - open - 4 seats | | | | | |
| E.A | Hyundai Accent 1,4 Auto | 209,00 | 246,40 | 285,00 | 343,20 | 48,50 |
| E.P | Peugeot 307/Opel Astra 1,4 | | | | | |
| F.S | Opel Astra Sedan/Toyota Corolla Terra | | | | | |
| F.M | Hyundai Matrix 1,6 | 246,40 | 285,00 | 343,20 | 419,50 | 59,00 |
| F.M.Au | Hyundai Matrix 1,6 Aut | | | | | |
| G.M. | Mini Bus Multipla /Caddy A/C - 6 seats | 285,00 | 340,00 | 440,00 | 525,00 | 74,00 |
| G. | Mini Bus Scudo A/C - 9 seats | | | | | |
| | Hyundai H1 A/C – 9seats or similar | 328,00 | 412,50 | 485,00 | 566,50 | 80,00 |
| X. | Nissan X-Trail 2.0 Luxury | 341,00 | 421,50 | 467,50 | 600,00 | 83,00 |

Minimum for the car rental is 3 days.

All above rates includes C.D.W., T.P.I., unlimited kilometres, taxes (23 %) and free delivery/collection at the Airport Heraklion during the working hours daily from 08:00 - 21:00.

Pick-up or drop-off between 21:00-08:00 will be charged with a supplement of **Euro 25,00**.

If you wish to pick-up and drop-off the car at Sentido Hotels/Rethymno, there will be a supplement of **Euro 50,00**

IMPORTANT NOTES: As the payment has to be arranged prior to arrival, clients don't have to show any credit card or leave any caution when they pick up the car!

Yes, I wish to book a car Cat _____ for the dates

From _____ -until _____ = Total days _____

Pick up should be arrange at (place) _____

(time and flight number) _____

TOTAL AMOUNT FOR ALL SERVICES: EURO _____

Payment will be arranged by:

A. Bank Deposit

PIRAEUS BANK
N.ERYTHREA – ATHENS
ACCOUNT NR: . 6728 – 113712 – 215 (PANHELLAS S.A.)
SWIFT – BIC: PIRBGRAA
IBAN: GR97 0171 7280 0067 2811 3712215

Account name – Panhellas S.A

Please do not forget to mention: JESS 2014

B. Credit Card: (+3% of the final amount)

I authorize Panhellas S.A. to collect the amount of Euro _____ from my credit card

VISA MASTER

Card no : _____ Exp. Date _____

Last three digits of the number at the backside of the card _____

Cardholder's signature _____ Date _____

Cardholder's address: _____

In case of cancellation, a 3% bank charge will be granted and the rest of the amount will be reimbursed to your credit card.

| |
|----------------------|
| Special Notes |
|----------------------|

A booking for additional nights is only confirmed when you have received the final confirmation for the reservation from us.

| |
|---------------------|
| Cancellation |
|---------------------|

All written cancellations of additional services (**not** the registration with JESS itself) should be addressed to Panhellas Congress & Tourism Crete at the address(es) shown above.

Please note that there will be no refund for cancellations after August 31st, 2014