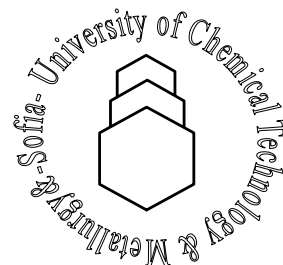




## 4<sup>th</sup> Real-SOFC Summer School



### **MANUFACTURING SOFC – FROM THE LABORATORY TO THE INDUSTRY AND INTO THE MARKET PLACE SOFC 2007**



**2 - 7 September 2007**

**Hotel "Aqua Azur"  
"St. St. Constantine and Elena" Resort, Varna, Bulgaria**

## Topics

- SOFC for efficient power generation technology
- Fuel processing and alternative fuels
- High temperature electro-chemistry and process characteristics
- Materials for SOFC
- State-of-the-art of manufacturing of SOFC
- Fabrication of SOFCs, stacks and systems
- Laboratory and industrial processing of SOFC components
- Tests and standard characterization
- Quality control of materials, cells and stacks
- Performance and life time limitations in cells and stacks
- Cost and market analysis regarding cells, stacks and systems

## Organization

**Integrated Project Real-SOFC/** “Realizing reliable, durable, energy efficient and cost effective SOFC systems”/ within the frames of 6<sup>th</sup> Framework Programme

### **Real-SOFC Project Coordinator**

Dr. Robert Steinberger- Wilckens (FZ Jülich, Germany)

### **Sponsored by**

European Union, 6<sup>th</sup> RTD Framework Programme

## Summer School Chairpersons

Prof. DSc. Dr. Eng. Vladimir Kozhukharov (UCTM, Bulgaria)

Dr. Robert Steinberger-Wilckens (FZJ, Germany)

## Organizing Committee

Dr. Robert Steinberger-Wilckens

(FZ Jülich, Germany)

Dr. Peter Holtappels

(EMPA, Switzerland)

Dr. Stelios Neophytides

(FORTH/ICE-HT, Greece)

Prof. Symeon Bebelis

(Univ. of Patras, Greece)

Dr. Stephane Hody

(GdF, France)

Prof. Vladimir Kozhukharov

(UCTM, Bulgaria)

## Summer School Secretariat

Chem. Eng. Mariya Ivanova  
Chem. Eng. Andrei Hristov

(UCTM, Bulgaria)  
(UCTM, Bulgaria)

## Correspondence

Prof. Vladimir Kozhukharov  
University of Chemical  
Technology and Metallurgy  
8, "Kliment Ohridsky" blvd  
1756- Sofia, Bulgaria  
Ph.: +359-2-81-63-375  
Fax: +359-2-86-85-488  
e-mail: [viko@uctm.edu](mailto:viko@uctm.edu)  
[www.lamar.hit.bg](http://www.lamar.hit.bg)

Eng. Mariya Ivanova  
University of Chemical  
Technology and Metallurgy  
8, "Kliment Ohridsky" blvd  
1756- Sofia, Bulgaria  
Ph.: +359-2-968-90-17  
Mob. ph.: +359-885-25-00-76  
Fax: +359-2-86-85-488  
e-mail: [m\\_ancheva@abv.bg](mailto:m_ancheva@abv.bg)

## Registration fee

The registration fee for the participants is € 550 and includes participation, educational materials, social events, six days FB (breakfast/lunch/dinner) and accommodation in Hotel "Aqua Azur".

The registration fee for accompanying persons is € 350 and includes six days FB (breakfast/lunch/dinner), accommodation in Hotel "Aqua Azur" and social events.

## Important deadlines

Preliminary registration – **31 May 2007**

Registration and payment have to be made not later than **15 July 2007**

Well-known experts in the scientific disciplines of the School will give the lectures. Notes will be published by the organizers and distributed to the participants in both printed and electronic form.

The School addresses PhD students and young researchers, as well as newcomers in the field of SOFC technology and will afford an opportunity for establishment of scientific and personal contacts between the participants.

	<b>Monday 03.09.07</b>	<b>Tuesday 04.09.07</b>	<b>Wednesday 05.09.07</b>	<b>Thursday 06.09.07</b>	<b>Friday 07.09.07</b>
	<a href="#">9:30-13:00</a> Welcome address (V.Kozhukharov) Introduction to SOFC: an innovative and efficient power generation technology and the market place (R. Steinberger)	<a href="#">9:00-13:00</a> Production: Ceramics (Th. Graule)	<a href="#">9:00-13:00</a> Stack materials and design (M. Stelter)	<a href="#">9:00-13:00</a> Stack and cell performance degradation: causes, effects and solutions- the current state of knowledge (D. Bronin)	<a href="#">9:00-13:00</a> Balance of plant- thermal management, gas processing and heat exchangers (O. Posdziech)
Coffee break					
	Production capacity of SOFC worldwide: developers, manufacturers and concepts (R. Steinberger)	Production: Steels and other components	Stack assembly (D. Haberstock)	Health and safety aspects (L. Gautier) Environmental considerations: product lifecycle analysis (L. Gautier)	Balance of plant- components and manufacturers (O. Posdziech) Quality assurance methodologies and methods (J. Hoffmann)
Lunch					
	<a href="#">16:00-19:00</a> Fuel Cell Technology I: Essential science (U. Stimming)	<a href="#">16:00-19:00</a> Cell Manufacture I: Development at a lab scale	<a href="#">16:00-19:00</a> Excursion	<a href="#">16:00-19:00</a> Cost analysis: cells, stacks and systems. Comparison to the market requirements (R. Steinberger) Market development and financing of Fuel Cell businesses (Ph. Doran)	<a href="#">14:00-16:00</a> Outlook and discussion: open issues and challenges in industrial production (J. Hoffmann)
Coffee break					
	Fuel Cell Technology II: Design concepts and requirements (S. Linderoth)	Cell Manufacture II: Scaling up to the industry		Student's session (V. Kozhukharov and R. Steinberger)	Concluding remarks (R. Steinberger)
	<a href="#">20:00</a> Welcome cocktail				<a href="#">19:00</a> Farewell dinner

# REGISTRATION FORM



## 4<sup>th</sup> Real-SOFC Summer School

### ***MANUFACTURING SOFC - FROM THE LABORATORY TO THE INDUSTRY AND INTO THE MARKET PLACE (SOFC 2007)***

---

**2 - 7 September 2007**

Hotel "Aqua Azur"

"St. St. Constantine and Elena" Resort, Varna, Bulgaria

Name/Title:.....Age:.....

Affiliation:.....

Postal Address:.....

.....

Postcode:...../Country:.....

Tel.:...../Fax:...../e-mail:.....

Arrival date/time:.....

Departure date/time:.....

Name of accompanying person(s):.....

Child/Children.....

Special requirements:.....

#### **"Aqua Azur" Hotel reservation:**

Please specify the number of the nights and preferred accommodation:

Single room .....

Double room .....

Because of the intensity of Black sea tourist season, the rooms in Hotel "Aqua Azur" have been already booked for the event (arrival on 02 September 2007/departure on 08 September 2007). More information about the hotel you will find following the link: <http://www.aquaazur.com/>

## Payment:

Regular registration fee: **550 Euro** / Accompanying persons fee: **350 Euro**.  
Payment should be made not later than 15 July 2007 by bank transfer in Euro  
to:

BULGARIAN NATIONAL BANK  
1, "Alexander Battenberg" Sq.  
Sofia-1000  
Bulgaria

Account Holder:  
University of Chemical Technology & Metallurgy – Research & Development  
Sector  
8, "Kliment Ohridsky" blvd.  
Sofia-1756  
Bulgaria

Account IBAN No: BG15 BNBG 9661 3400 1030 41  
SWIFT (BIC) code: BNBGBGSF

Correspondent Bank:  
DEUTSCHE BANK, Frankfurt  
Account No: 10092334950000  
SWIFT code: DEUTDEFF

Return this registration form to Mariya Ivanova on  
[m\\_enecheva@abv.bg](mailto:m_enecheva@abv.bg) or by fax: +359-2-86-85-488

Deadline for registration and payment: **15 July 2007**