



### Travel information

#### By car

Semmering is situated 7 km from the S6 Semmering motorway and 90 km from Vienna.  
<http://www.touristcam.at/routenplaner.php>

#### By train

More than 20 trains stop every day at the Semmering railway station, coming from Vienna and Graz. <http://www.oebb.at>

#### By plane

Vienna airport is only 100 km from Semmering. Using a car, please follow the highway A2 in the direction to Graz and the S6 from Seebenstein to Semmering..

### Artis Hotel Semmering

Address: 2680 Semmering 99, Austria  
 homepage: <http://www.artis-semmering.at>

### Semmering

The Semmering resort is located about 1000 m above sea level in a marvellous mountain region. The surroundings include the world's first mountain railway, which was constructed in the 1850s and is part of the Unesco world heritage. With 16 spectacular viaducts, 15 tunnels, 142 vertical structures, 129 bridges, modelled rock faces and supporting walls, it was built in only six years.

Semmering became a famous meeting area for the monarchical society and hosted as well such prominent visitors as Schnitzler, Werfel, Kokoschka, Brahms, Mahler, and Schönberg. This historic atmosphere has been preserved.



**ESAO**  
**Winter School 2011**  
 January 26<sup>th</sup> - 29<sup>th</sup>, 2011



## Advancing Roles: Biomaterials in Artificial Organs and Regenerative Medicine *Passive to Active to Bioreactive*

A joint activity of the European Society for Artificial Organs  
 and the American Society for Artificial Organs  
 together with EEIG Regenerate

*and organised by*  
**FP7 Marie Curie Industry-Academia Partnerships and  
 Pathways (IAPP) MONACO-EXTRA project**

Artis Hotel Semmering, Austria



## Programme

## Mission of the ESAO Winter School

- To provide high level education in specific fields of artificial organs
- To teach the teachers
- To provide interaction among scientific participants in an attractive atmosphere

## Scientific Committee

**Chairs:** Dieter Falkenhagen (Krems), Edward F. Leonard (New York), Sergey Mikhailovsky (Brighton), Hans Jörg Meisel (Halle/Saale), Heinrich Schima (Vienna), Viktoria Weber (Krems)

Jadranka Buturovic-Ponikvar (Ljubljana), Birgit Glasmacher (Hannover), C. James Kirkpatrick (Mainz), Andrew Lloyd (Brighton), Gary Philips (Brighton), Rafael Ponikvar (Ljubljana), Gerhard Rakhorst (Groningen), Rui L. Reis (Caldas das Taipas), Mairead Stickings (Brighton), Jörg Vienken (Bad Homburg), Beat Walpoth (Geneva), Jan Wojcicki (Warsaw)

## Organisation

Anita Aichinger (Krems)

Questions regarding this conference may be directed to either the chairs (program and content) or to the congress office (arrangements).

### Congress office:

ESAO office: Anita Aichinger  
Dr. Karl Dorrek Str. 30, A-3500 Krems  
Tel.: ++43-(0)2732/893-2633  
Fax: ++43-(0)2732/893-4600  
E-mail: [anita.aichinger@donau-uni.ac.at](mailto:anita.aichinger@donau-uni.ac.at)  
homepage: [www.esao.org](http://www.esao.org)

### Contact for meeting content:

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Tel.: +44 (0)1273 642034  
E-mail: [S.Mikhailovsky@bton.ac.uk](mailto:S.Mikhailovsky@bton.ac.uk)

## This Winter School will focus on four biomaterial topics:

- **Optimization of blood- and tissue compatibility**
- **Enhancing active characteristics of biomaterials, especially of membranes, adsorbents and scaffolds**
- **Interaction of biomaterials and cells: avoiding conflicts, increasing synergies**
- **New roles and functions for biomaterials**

New artificial organs and new approaches to organ failure require new biomaterials. Nanoscience and microfabrication techniques address this need. Steady progress has been made in controlling how material surfaces and cells interact with each other. Unwanted reactions can be avoided and desirable ones can be enhanced.

The meeting program juxtaposes cutting-edge approaches in organ therapy and replacement, new developments in the physical sciences and technology, and new discoveries in the basic biology of cells. A core group of international leaders in these areas will present and discuss how these innovations can come together to form a new era in the development of artificial organs.

Therefore, this meeting organised as a scientific school is an ideal meeting point for all academics having activities and interest in the field of biomaterials.

**Homepage:** [www.esao.org/winterschool](http://www.esao.org/winterschool)

## Wednesday, January 26

<b>2:00 - 5:00 p.m.</b>	<b>Monaco Extra Project Meeting</b>
<b>6:30 - 6:45 p.m.</b>	<b>Welcome</b> E. Leonard, D. Falkenhagen, H. Schima
<b>6:30 - 8:15 p.m.</b>	<b>Opening Session</b> <i>Chair:</i> Heinrich Schima
6:45 - 7:30 p.m.	Renate Loidolt The golden era of semmering around 1900
7:30 - 8:15 p.m.	C. James Kirkpatrick Nanotechnology and biomaterials
<b>8:15 p.m.</b>	<b>Dinner</b>

## Thursday, January 27

<b>8:30 - 10:00 a.m.</b>	<b>Morning session I</b> <i>Chair:</i> Sergey Mikhalovsky Beat H. Walpoth
8:30 - 9:15 a.m.	Edward F. Leonard How flow affects biomaterial performance
9:15 - 10:00 a.m.	Dieter Falkenhagen Adsorption for blood purification - a review
<b>10:00 - 10:30 a.m.</b>	<b>Coffee Break</b>

<b>10:30 - 12:00 a.m.</b>	<b>Morning session II</b> <b>Future aspects of biomaterials</b> <i>Chair:</i> Edward F. Leonard Viktoria Weber
10:30 - 11:00 a.m.	Andreas Lendlein Multifunctional biomaterials
11:00 - 11:30 a.m.	Rui L. Reis Bioactive and biodegradable materials play a key role on regenerative medicine approaches
11:30 - 12:00 a.m.	Andrew Lloyd Biomaterials: back to the future
<b>5:00 - 7:45 p.m.</b>	<b>Evening session</b> <b>Performance &amp; activity of biomaterials I</b> <i>Chair:</i> Gary Philips Jadranka Buturovic-Ponikvar
5:00 - 5:45 p.m.	Buddy Ratner Manipulating the Macrophage: A Refocus for Biomaterials, Tissue Engineering and Regenerative Medicine
5:45 - 6:15 p.m.	Steve Tennison Nanoporous carbon materials: properties, production and biomedical applications
<b>6:15 - 6:45 p.m.</b>	<b>Coffee break</b>
6:45 - 7:15 p.m.	Irina Kalashnikova Design of surfaces of monolithic sorbents for effective virus separation
7:15 - 7:45 p.m.	Susan Sandeman Tailoring carbon adsorbents to moderate the inflammatory response
<b>7:45 p.m.</b>	<b>Dinner</b>

## Friday, January 28

**8:30 - 10:00 a.m.**

**Morning session I**  
**Performance & activity of biomaterials II**  
*Chair:* Birgit Glasmacher  
Andrew Lloyd

8:30 - 9:15 a.m. Jan Feijen  
In situ forming of hydrogels for tissue engineering of cartilage

9:15 - 10:00 a.m. Gary L. Bowlin  
Electrospinning: Passive to regenerative vascular tissue engineering scaffolds

**10:00 - 10:30 a.m.**

**Coffee Break**

**Morning session II**  
*Chair:* Rafael Ponikvar  
Jörg Meisel

10:30 - 11:00 a.m. Dirk Grijpma  
Preparation of advanced tissue engineering scaffolds by stereolithography

11:00 - 11:30 a.m. Maria B. Dainiak  
Bioactive materials for tissue engineering

11:30 - 12:00 a.m. Erhan Piskin  
Cryogels in animal models

12:00 – 12:30 p.m. Beat H. Walpoth  
From passive to active biomaterial surface coating for cardiovascular applications

**5:00 - 7:45 p.m.**

**Afternoon session**  
**Blood compatibility**  
*Chair:* Dieter Falkenhagen  
Jan Feijen

5:00 - 5:45 p.m. William R. Wagner  
Measuring and designing biocompatibility in blood contacting devices

5:45 - 6:15 p.m. Jörg Vienken  
Are current tests for biomaterials adequate?

**6:15 - 6:45 p.m.**

**Coffee break**

**6:45 - 7:45 p.m.**

**Round Table Discussion**  
Nanostructured materials for bone and cartilage replacement  
Jörg Meisel, Stefan Nehrer, Carlos Semino

**7:45 p.m.**

**Dinner**

## Saturday, January 29

**8:30 - 10:00 a.m.**

### **Morning session**

#### **Interaction of biomaterials and cells**

*Chairs:* Stefan Nehrer

Erhan Piskin

8:30 - 9:15 a.m.

Thomas Groth

Design of biomaterial surfaces to control cell adhesion and beyond

9:15 - 10:00 a.m.

Viktoria Weber

Matrices and techniques for the enrichment of circulating tumor cells

**10:00 - 10:30 a.m.**

### **Coffee Break**

10:30 - 11:00 a.m.

Harald Kirsebom

Porous biodegradable matrices as potential cell scaffolds and affinity matrices

11:00 - 11:30 a.m.

Birgit Glasmacher

New roles and functions for biomaterials:  
Mimicking extracellular matrix

11:30 - 12:00 a.m.

Franco Rusticelli

Blood vessel visualization by the innovative technique X-ray holotomography without contrast agent

**12:00 - 12:15 p.m.**

### **Concluding remarks**

Heinrich Schima

## **Call for abstracts**

All participants are invited to submit their work for poster presentation. Student participants have to present a poster in order to receive free hotel accomodation and reimbursement of travel expenses.

Abstracts must be written in English and should not exceed 400 words, not including title, names and affiliation of the authors.

Titles should be typed in capital letters.

Names of the authors should begin in a new line. Underline the name of the presenting author.

List institution(s), city and country in a new line.

Text of the abstract should be submitted in structured form including Objectives, Design and Methods, Results, Conclusions.

At the bottom, cite presenting author's full address, including fax and e-mail address.

Please submit your abstracts by e-mail as an attached word file to:  
**[anita.aichinger@donau-uni.ac.at](mailto:anita.aichinger@donau-uni.ac.at)**

**Deadline for abstract submission is December 6<sup>th</sup>, 2010.**

The maximum poster size is 110 cm (width) x 140 cm (height).

## List of Speakers and Chairpersons

**Gary L. Bowlin**, Virginia Commonwealth University, 401 West Main St., Room E1254, Engineering East, Richmond, VA 23284-3067, Virginia, USA

**Jadranka Buturovic Ponikvar**, Department of Nephrology, University Medical Center Ljubljana, Zaloska 7, 1525 Ljubljana, Slovenia

**Maria Dainiak**, Protista Biotechnology AB, Ole Römers väg 12, 223 70 Lund, Sweden

**Dieter Falkenhagen**, Center for Biomedical Technology, Danube University Krems, Dr. Karl Dorrek Str. 30, 3500 Krems, Austria

**Jan Feijen**, University Twente, Faculty of Science and Technology, Building Carre, P.O. Box 217, 750 AE Enschede, the Netherlands

**Birgit Glasmacher**, Center for Biomedical Engineering and Institute for Multiphase Processes, Leibniz Universität Hannover, Germany, Callinstr. 36, D-30167 Hannover

**Dirk Grijpma**, University Twente, Faculty of Science and Technology, Building Carre, P.O. Box 217, 750 AE Enschede, the Netherlands

**Thomas Groth**, Biomedical Materials Group, Institute of Pharmacy, Martin Luther University Halle-Wittenberg, Heinrich-Damerow Strasse 4, 06120 Halle/Saale, Germany

**Irina Kalashnikova**, Polymerics GmbH, Landsberger Allee 378 A, D-12681 Berlin, Germany

**C. James Kirkpatrick**, Institute of Pathology, Johannes Gutenberg University, Langenbeckstrasse 1, 55101 Mainz, Germany

**Harald Kirsebom**, Department of Biotechnology, Lund University, P.O. Box 124, SE-22100 Lund, Sweden

**Andreas Lendlein**, GKSS Research Center Geesthacht GmbH, Kantstraße 55 - 14513 Teltow, Germany

**Edward F. Leonard**, Chemical and Biomedical Engineering, Columbia University MC 4721, New York, NY 10027, USA

**Andrew Lloyd**, University of Brighton, Cockcroft Building, Lewes Road, Brighton BN2 4GJ, United Kingdom

**Renate Loidolt**, Festspiele Reichenau GmbH, Dörfel 57, 2651 Reichenau/Rax, Austria

**Hans J. Meisel**, Clinic for Neurology, BG-Kliniken Bergmannstrost, Merseburger Str. 165, 06112 Halle, Germany

**Sergey Mikhalovsky**, School of Pharmacy and Biomolecular Sciences, University of Brighton, Cockcroft Building, Lewes Road, Brighton BN2 4GJ, United Kingdom

**Stefan Nehrer**, Center for Regenerative Medicine, Danube University Krems, Dr. Karl Dorrek Str. 30, 3500 Krems, Austria

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**Buddy Ratner**, University of Washington Engineered Biomaterials, N330J William H. Foege Building, 3720 15th Ave NE, Seattle, WA 98195, USA

**Rui L. Reis**, Department of Polymer Engineering, University of Minho, S. Claudio do Barco, 4806-909 Caldas das Taipas, Giumaraes, Portugal

**Franco Rustichelli**, Sezione Scienze Fisiche, Dipartimento S.A.I.F.E.T., Università Politecnica delle Marche, Via Breccie Bianche, 60131 Ancona, Italy

**Susan Sandeman**, University of Brighton, Cockcroft Building, Lewes Road, Brighton BN2 4GJ, United Kingdom

**Heinrich Schima**, Center for Biomedical Engineering and Physics, Medical University of Vienna, Währinger Gürtel, 18-20, 1090 Vienna, Austria

**Carlos E. Semino**, University Ramon Lull Barcelona, Bioengineering Center Institut Quimic de Sarria, Via Augusta 390, 08017 Spain, Barcelona

**Steve Tennison**, Mast Carbon International Ltd, Henley Park, Guildford, Surrey GU3 2AF, U.K.

**Jörg Vienken**, Fresenius Medical Care, BioScience Department, Else Kröner Strasse 1, 61346 Bad Homburg, Germany

**William R. Wagner**, University of Pittsburg, Department of Bioengineering, Bridgeside Point II 450, Technology Drive, Suite 300, Pittsburg, PA 15219, Pennsylvania, USA

**Beat H. Walpoth**, Cardiovascular Research, Department of Surgery, HUG Univ. Hospital, 24 rue Micheli du Crest, 1211 Geneve 14, Switzerland

**Viktoria Weber**, Center for Biomedical Technology, Danube University Krems, Dr. Karl Dorrek Str. 30, 3500 Krems, Austria

## Registration form

Last Name, Title:

First Name:

Institute:

Address:

Postal Code/City/Country:

Tel./Fax:

E-mail:

*Hotel needed from:* ..... *to:*.....

**Abstract submission and registration is open from November 8<sup>th</sup> to December 6<sup>th</sup>.**

**The number of participants is limited to 100.**

### *Registration fee (in Euro)*

REGISTRATION

participation fee: €150,--

students: € 50,--

Please fill in the registration form and send it to:  
Anita Aichinger, Dr. Karl Dorrek Str. 30, 3500 Krems, Austria  
tel.: ++43-(0)2732/893-2633 (Mo - Fr, 8 a.m.- 12a.m.)  
fax: ++43-(0)2732/893-4600  
e-mail: [anita.aichinger@donau-uni.ac.at](mailto:anita.aichinger@donau-uni.ac.at)

## Conditions

For US Speakers:

The registration fee is waived. Hotel accommodations (including breakfast and dinner) are provided for 3 nights. Transfer from Vienna International Airport (VIE) to Semmering will be provided. In case of not using the shuttle only expenses equivalent of the train ticket (€ 60) will be reimbursed. Travel expenses up to 1000 Euro will be reimbursed. (Note carefully: The original ticket invoice and the retained part of the incoming boarding pass must be submitted upon registration.)

EU Speakers:

The registration fee is waived. Hotel accommodations (including breakfast and dinner) are provided for 3 nights. Transfer from Vienna International Airport (VIE) to Semmering will be provided. In case of not using the shuttle only expenses equivalent of the train ticket (€ 60) will be reimbursed. Travel expenses up to 400 Euro will be reimbursed. (Note carefully: The original ticket invoice and the retained part of the incoming boarding pass must be submitted upon registration.)

Regular Participants:

The registration fee is 150 Euro. Hotel accommodations for 3 nights (including breakfast and dinner) are free.

EU Students:

The registration fee is 50 Euro. Hotel accommodations for 3 nights (including breakfast and dinner) are free. Travel expenses up to 200 Euro will be reimbursed. (Note carefully: The original ticket invoice and the retained part of the incoming boarding pass must be submitted upon registration.). Submission of poster abstract is obligatory.

Overseas Students:

The registration fee is 50 Euro. Hotel accommodations for 3 nights (including breakfast and dinner) are free. Travel expenses up to 800 Euro will be reimbursed. (Note carefully: The original ticket invoice and the retained part of the incoming boarding pass must be submitted upon registration.) Submission of poster abstract is obligatory.

For all participants:

No refund based on mileage can be provided!

## Payment

**Payment is possible by bank transfer only.**

### Payment terms:

Bank expenses and currency exchange fees will not be covered by the organizers. Please make sure that your First and Last Name or Institution and the words “**Registration to Winter School 2011**” appear on your bank transfer order.

Account name: Monaco Extra Winter School

Address: Donau Universität Krems  
Dr. Karl Dorrek Str. 30  
A-3500 Krems

Account number: 03973 261 511

Bankcode: 12000

Name of the bank: Bank Austria Krems  
Obere Landstraße 19  
A-3500 Krems, Austria

IBAN: AT48 1200 0039 7326 1511

BIC: BKAUATWW

### **Cancellation:**

**Until Dec 21<sup>st</sup>, 2010: refund of 50%**

**After Dec 21<sup>st</sup>, 2010: no refund**

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***FP7 Marie Curie Industry-Academia Partnerships and Pathways (IAPP) MONACO-EXTRA project (218242)***



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**Fresenius Medical Care**



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