

29th EMS Summer School

“Membranes for liquid separation”



22nd – 26th July 2013
Essen, Germany

Scientific Committee

Prof. Dr. Mathias Ulbricht (University Duisburg-Essen, Germany; Chair)

Dr. Jörg Balster (Evonik Industries, Austria/Germany)

Prof. Dr. Wojciech Kujawski (University Torun, Poland)

Prof. Dr. Susana Luque (University Oviedo, Spain)

Organizing Committee

Mathias Quilitzsch (Head)

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Oxana Mechling

Thorsten Pieper

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Anne Vaterrodt

Prof. Dr. Mathias Ulbricht

(Lehrstuhl für Technische Chemie II, Universität Duisburg-Essen)

Partners

Evonik Industries (Germany)

inge GmbH, ein Unternehmen der BASF seit 2011 (Germany)

Membrana (Germany)

Merck Millipore (USA)

Sartorius (Germany)

Scope and contents

Membrane technologies have been established for many applications in a wide range of areas, for instance for water purification and reuse, for medical therapies, in the food, pharmaceutical or chemical industries, for energy technologies as well as for environmental protection. The development of this multidisciplinary area is very dynamic. The European Membrane Society (EMS) is organizing annual summer schools with the aim to provide young researchers, in particular Ph.D. students, and young professionals in depth insights into the fundamentals and recent trends of the field.

The topic of the 29th EMS Summer School in Essen, Germany, is:

Membranes for liquid separation: Development, production and characterization of polymer-based membranes for separations in aqueous systems and organic media discussed from a fundamental and industrial point of view

In the core of the program are tutorial lectures by European membrane experts from academia and industry. With the focus on liquid separation, some of the presentations will deal the theoretical background for membrane materials and process development. Complementary presentations will be given by experts from various companies which are either producing or applying membranes. Selected lectures will also be devoted to emerging or new aspects of the field.

Program

Time	Monday 22.07.
9:00-10:00	
10:00-13:30	Registration
13:30-14:45	Lunch
14:45-15:00	opening ceremony
15:00-16:00	Kätzel, U. Merck, Darmstadt, Germany, <i>Process development of membrane separations in the pharmaceutical & chemical industry</i>
16:00-17:00	Luque, S. University of Oviedo, Spain, <i>Industrial applications of membranes: process streams and effluent treatment</i>
17:00-18:00	Flemming, H.-C. Universität Duisburg-Essen, Germany, <i>Biofilms and membranes</i>
18:00-20:00	Poster session
20:00	Dinner

Time	Tuesday 23.07.
9:00-10:00	Ansorge, W. Membrana, Wuppertal, Germany, <i>Industrial development and production of polymer membrane</i>
10:00-11:00	Peinemann, K. V. KAUST, Thuwal, Saudi-Arabia, <i>Emerging membrane materials: from self-assembled to biomimetic structures</i>
11:00-11:30	coffee
11:30-12:30	Vankelecom, I. Catholic University of Leuven, Belgium, <i>Mixed matrix membranes</i>
12:30-13:30	Bettermann, I. CUT, Erkrath, Germany, <i>Design and construction of membrane modules – an application-oriented overview</i>
13:30-15:00	Lunch
15:00-16:00	Kreis, P. Evonik, Marl, Germany, <i>Hybrid membrane processes with "conventional" thermal separations</i>
16:00-17:00	Livingston, A. Imperial College, London, U.K., <i>Hybrid membrane processes with catalysis</i>
17:00-18:00	Kujawski, W. Nicolaus-Kopernikus University, Torun, Poland, <i>Pervaporation & membrane distillation</i>
18:00-19:00	Free Time
19:00-20:00	Dinner

Time	Wednesday 24.07.
9:00-10:00	Panglisch, S. Inge/BASF, Greifenberg, Germany, <i>Water purification with ultrafiltration</i>
10:00-11:00	Lipnizki, J. Lanxess, Leverkusen/Bitterfeld, Germany, <i>Water desalination including membrane processes</i>
11:00-11:30	coffee
11:30-12:30	Freger, V. Technion, Haifa, Israel, <i>Structure of and transport through RO and NF membranes</i>
12:30-13:30	Yaroshchuk, A. ICREA, Barcelona, Spain, <i>Towards advanced engineering model of pressure-driven and osmotic membrane processes in multi-ion solutions</i>
13:30-15:00	Lunch
15:00-20:00	Excursion
20:00	Special Dinner

Time	Thursday 25.07.
9:00-10:00	
10:00-11:00	Wickramasinghe, R. University of Arkansas; Fayetteville, USA, <i>Membrane processes for biorenewables</i>
11:00-11:30	coffee
11:30-12:30	Thom, V. Sartorius, Göttingen, Germany, <i>Membrane based virus clearance & virus harvest</i>
12:30-13:30	Crespo, J. Universidad Nova de Lisboa, Portugal, <i>Engineering with membranes for bioprocessing</i>
13:30-15:00	Lunch
15:00-16:00	Ulbricht, M. Universität Duisburg-Essen, Germany, <i>Functionalized membranes for improved process performance</i>
16:00-17:00	Strathmann, H. Universität Stuttgart, Germany, <i>Random walk through membrane science from artificial kidneys and water desalination to ion-flow batteries</i>
17:00-18:00	Poster Awards and Closing
18:00-19:00	Free Time
19:00-20:00	Dinner

Essen as host city of the EMS Summer School 2013

The EMS Summer School 2013 will take place in the premises of the University of Duisburg-Essen, Campus Essen. With over 35,000 students the University is one of the ten largest universities in Germany in the heart of the Ruhr region in North-Rhine Westfalia. The “Centre for Water and Environmental Research” (ZWU) is representing one of the universities core competence areas, and membrane-based technologies are important in several ZWU projects in education or research.

The Ruhr region is the third largest conurbation in Europe with about 5.3 million people from over 170 nations in 53 cities. Today the region is dominated by the legacy of the industrial age such as the UNESCO world heritage site “Zeche Zollverein” in the north of Essen. In the middle of the 19th Century one of the busiest industrial areas in Europe arose from small settlements. The decline of the coal and steel industry began in the 60s of the 20th Century and the region faced major challenges. A transformation from heavy industry to a service metropolis started, which was not always straightforward. Nowadays 10 of the 100 largest German companies have their headquarters in this region. The successful transformation is also expressed in a variety of educational institutions; five universities, ten polytechnics, and about 100 research institutions are located in the region that have promoted change through innovation in the past, present and in the future. In 2010 Essen and the Ruhr region were the Cultural Capital of Europe, where the structural development was epitomized by the motto "Effecting change through culture – enhancing culture through change". This could be experienced by approx. 10.5 million visitors from all over the world. The highlights of the region are the Folkwang museum in Essen or the „U“ in Dortmund, a converted industrial building of the former “Dortmund Union” brewery, which now houses a 80 000 square meter exhibition center for contemporary art. Famous architects such as Norman Foster and David Chipperfield are involved in the structural transformation of the region.

Besides the competence in membrane technology at the University of Duisburg-Essen, there are several companies located in this region dealing with manufacturing, distribution and application of membranes and membrane systems. Over 30 years ago the company Membrana started the large scale production of membranes for medical and industrial separation processes, and today it is the largest independent membrane producer worldwide. Other examples are the companies CUT Membrane technology GmbH and Evonik Industries which are also involved in the development of new membranes and applications.

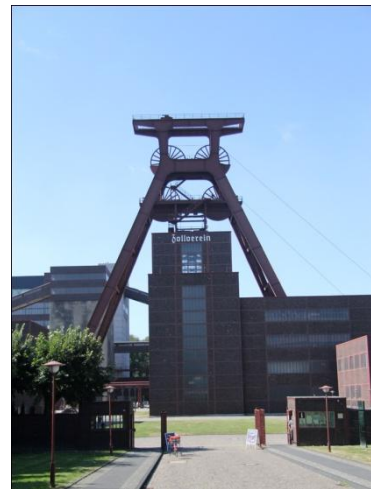


Locations



All lectures and the poster session will take place at the University of Duisburg-Essen (Campus Essen). Lunch and dinner will be offered at the universities canteen. On the last day of the conference a gala dinner will be served here, offering the possibility to intensify new contacts in an informal atmosphere.

For the social day, a trip to the “Zeche Zollverein”, a former Coal Mine Industrial Complex in Essen, is planned. This industrial complex is inscribed into the UNESCO list of World Heritage Sites since December 2001 and is one of the anchor points of the European Route of Industrial Heritage. The guided tour will take the guests around the surface area of the mine and to the coking plant thus conveying a feeling for what heavy industry was once like. A typical regional lunch will be taken in one of the buildings of the former mine. Thereafter, the participants will be brought to the railway station or the university.



Accommodation

Students and other participants will be accommodated in the “**Bildungshotel at the BfZ-Essen**” (<http://www.bildungshotel-essen.de>) mostly in two-bed rooms. The Bildungshotel is close to the campus and can be reached within 10 minutes by foot. The rooms have been refurbished recently and offer TV and cost free WLAN access.

Arrival

The journey to Essen is very easy, as Essen is located in the “Ruhr Area” with an excellent public transport network. You may arrive by train, car or airplane.

If you want to travel by train, direct train connections from Frankfurt, Amsterdam, Köln or Düsseldorf, but also from Berlin and Paris deliver you to Essen and within another 15 min you arrive at the university.

If you want to travel by airplane, the easiest way is to fly to Düsseldorf, the third biggest Airport in Germany and then take the train to Essen (20-25 min). With budget airlines you could also use the airports Weeze (Düsseldorf) or Dortmund, also linked by public transport to Essen (< 1 hour).

It is also very comfortable to travel by car because Germany and especially the “Ruhr Area” provide an excellent road network. The Bildungshotel where most of the participants are hosted is in the close vicinity of the University’s Campus (app. 10 min by foot).



From Düsseldorf Airport to Essen main station by train: RE1, RE3, RE6, S1

From Köln/Bonn Airport to Essen main station by train: S13 to Köln Deutz and change trains S6, RE1

From Essen main station:

University Campus:

Stop „Universität“ (take exit Universität):

- subway route U11 (terminating at GE-Buerer Str.)
- subway route U17 (terminating at Altenessen)

Bildungshotel:

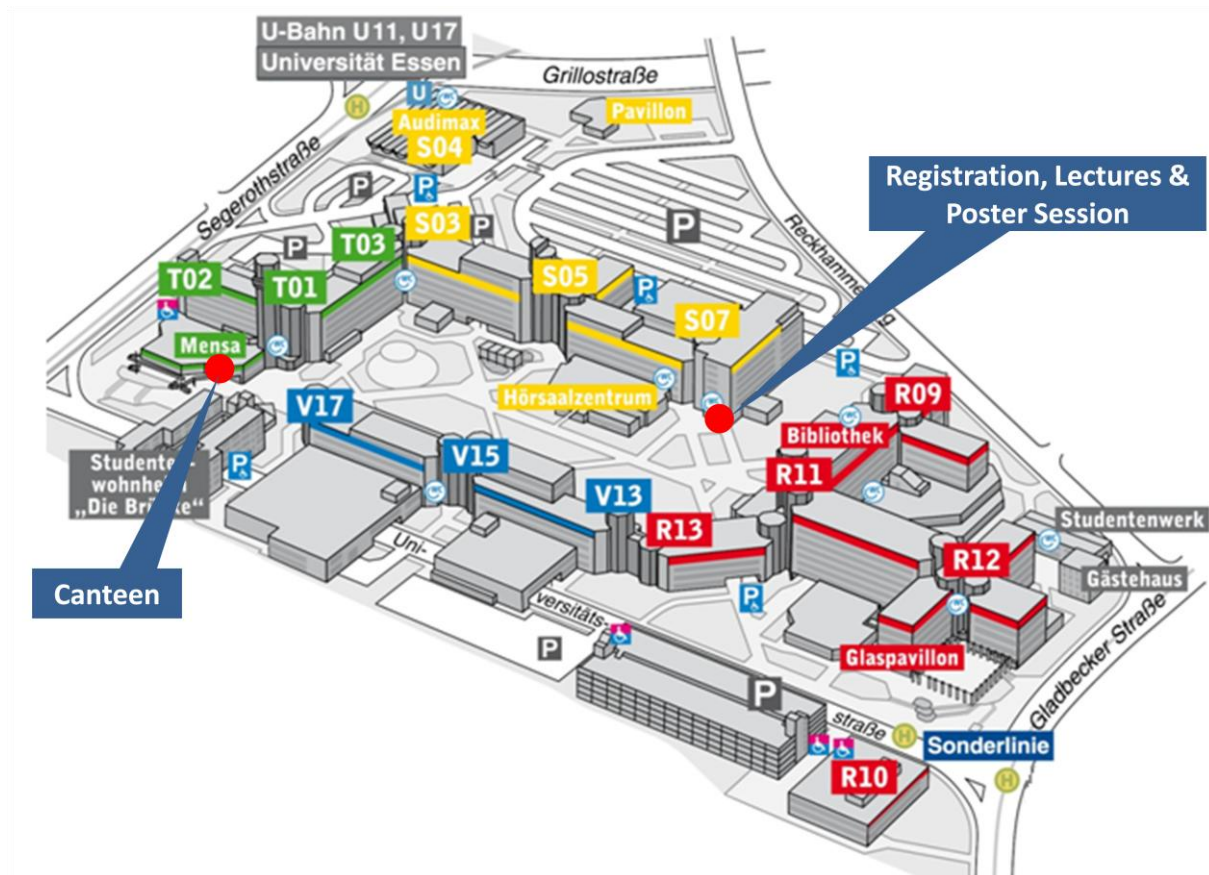
Stop „Katzenbruchstraße“:

- tram 106 (terminating at Altenessen)

All connections in and around Essen can be found at www.vrr.de

Registration

Onsite registration will start on Monday 22nd at the campus in building S07 at 10:00. If you have already paid the registration fee, a hotel room at the Bildungshotel is reserved for you. The check in at the Hotel will be open all day long so you can leave your luggage there before doing the onsite registration.



Poster session

Participants presenting a Poster should come to the registration desk in S07 before 15:00 to find their assigned poster location. Posters may not be larger than A0. The Posters may be placed from 10:00 and shall be removed after the poster session. We take no responsibility for Posters not removed after 20:00.

Excursions

As we announced during the registration, we had only a limited capacity for the excursions. Participants who registered for participation in the excursions were assorted to the two groups, going to visit either Membrana in Wuppertal or Evonik Industries in Marl, according to the date of registration. All participants not on these lists are placed on a waiting list. If you want to recede from participation or want to swap the company you are visiting in an urgent case, please contact us immediately.

The meeting point and departure time for the excursions will be announced during the lectures and at the info desk in S07.

Catering

We will have reserved tables in the universities canteen in the designated lunch breaks. Besides that the canteen is open from 11:15 to 14:15.

In your conference bag you will find a chip which is used for payment. Students will also receive a preliminary student ID that has to be shown at the cash desk to profit from the discount for students. The chip can also be used for payment in the two cafeterias in buildings T01 and R12. Dinner will be served in the cafeteria in T01 which will be reserved for the conference in the evening.

For any further information or request during the conference you will find a contact at the registration desk in S07 during the whole summer school.

We are looking forward to welcome you in Essen.