

# 30<sup>th</sup> EMS Summer School

“Membranes for liquid separation”



22<sup>nd</sup> – 26<sup>th</sup> July 2013  
Essen, Germany

## **Scientific Committee**

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## 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 30<sup>th</sup> 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.

Planned lectures will deal with:

- Established and „novel“ membrane processes for liquid separations: Overview and trends (*academic*)
- Water purification with membranes (*industry*)
- Bioseparations using membranes (*industry*)
- Membrane separations in pharmaceutical / chemical industry (*industry*)
- Biorefinery processes (*academic*)
- Hybrid membrane processes – with thermal separations and catalysis (*academic & industry*)
- Electromembrane processes (*academic*)
- Pervaporation, membrane distillation (*academic*)
- Biofilms and membranes (*academic*)
- Polymer membrane formation / manufacturing (*academic & industry*)
- Mixed matrix membranes (*academic*)
- Novel membranes materials and structures (*academic*)
- Transport through membranes (*academic*)
- Membrane characterization (*academic & industry*)
- Membrane modules (*industry*)

The Summer School in Essen will also involve an excursion to a membrane producing company where the participants will gain insights into industrial manufacturing of flat-sheet and hollow-fiber membranes and respective modules.

During the scheduled poster session, all participants are given the possibility to present their own work to the audience.

## **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 from small settlements one of the busiest industrial areas in Europe arose. 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 GmbH & CoKG and Evonik Industries which are also involved in the development of new membranes and applications.



## Overall Schedule

The preliminary schedule of the conference involves 4 days with oral and poster presentations as well as an excursion. On Friday, a half day social program is offered which will end at approximately 2 pm to give the participants the possibility to start their journey home.

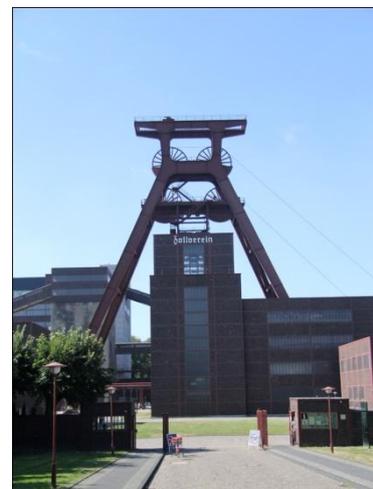
Time	Monday 22.07.	Tuesday 23.07.	Wednesday 24.07.	Thursday 25.07.	Friday 26.07.
9:00	Registration	NN (Industry)	Academia Emerging/new trends	Academia Tutorial lectures on fundamentals	Social Day  Zeche Zollverein + Lunch
10:00		NN (Industry)	Academia Emerging/new trends	Academia Tutorial lectures on fundamentals	
11:00		NN (Industry)	Academia Emerging/new trends	Academia Tutorial lectures on fundamentals	
12:00		NN (Industry)	Lunch	Academia Tutorial lectures on fundamentals	
13:00	Lunch	Lunch	Excursion (13:00 -18:00)	Lunch	
14:00	Opening Ceremony	NN (Industry)		Academia Special Presentation	
15:00		NN (Industry)		Poster Award(s) and Closing	
16:00	Academia Tutorial lectures on fundamentals	NN (Industry)		Dinner	
17:00	Academia Tutorial lectures on fundamentals	NN (Industry)	Dinner		
18:00	Poster	Dinner	Special Dinner	Free Time	
19:00		Free Time	Party at KKC		
20:00	Dinner				

## 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>) 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 bring 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.

## **Registration**

The regular registration period for the EMS Summer School 2013 will start in January 2013 and end March 31, 2013. After this period, an additional fee for late registration will be charged. Participants who are presenting a poster will have to upload an abstract during the registration process, which will be published in the conference book.

## **Conference fee**

The conference fee is including accommodation, meals, coffee, gala dinner, conference book and the social day. Fee for students will be approximately 550 EUR. Binding data will be given with the start of the registration period.

We are looking forward to welcome you in Essen.