

**INSTITUTE OF MACROMOLECULAR CHEMISTRY AS CR, v.v.i**

**MEGA Co.**

**CZECH MEMBRANE PLATFORM**

**INSTITUTE OF CHEMICAL TECHNOLOGY PRAGUE**

**UNIVERSITY OF PARDUBICE,  
FACULTY OF CHEMICAL TECHNOLOGY**

**EUROPEAN MEMBRANE SOCIETY**

# PERMEA 2009

**Prague, 7-11 June, 2009**

***PROGRAMME BOOKLET***



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# GENERAL INFORMATION

## REGISTRATION

On-site registration of participants takes place on Sunday, 7 June, from 14:00 to 19:00 in the Pyramida Hotel, Bělohorská 24, Praha 6 and continues the next day from 8:00. The Conference Office operates on 8-11 June from 8:00 to 12:00 and from 14:00 to 16:00 (except Thursday).

All participants must register. Only persons wearing name badges are entitled to enter the lecture rooms.

### Registration fees

On-site cash payment of the registration fee is considered as a late payment. The Conference Secretariat accepts EC/MC, EDC/Maestro and VISA cards at the Registration desk.

## PRESENTATION OF CONTRIBUTIONS

### Sessions

All sessions will be held in the Pyramida Hotel, Bělohorská 24, Praha 6.

### Language

English is the working language of the Conference.

### Plenary lectures

The presentation time for each plenary lecture is 40 min, including discussion.

### Keynote lectures

The presentation time for each keynote lecture is 35 min, including discussion.

### Special lectures

The presentation time for special lectures is 25 min, including discussion.

### Poster communications

Poster sessions will take place on Monday and Tuesday. Posters should be mounted during the programme breaks on Monday and Tuesday according to the Programme Booklet.

## PRESENTATION FACILITIES

Data-Video-Projector (XGA) connected to a local PC will be available. Following media can be used for transfer of data: FDD 3.5", CD, DVD-R, USB-flash. Other supported inputs are via: PC MCIA, IEEE 1394 ports, 4-in-1 Card Reader-Multimedia Card, Secure Digital, Memory Stick, Smart Media, or from VHS. No connection of notebooks or laptops will be possible.

## PUBLICATION OF PAPERS

Full text of plenary, keynote, and special lectures as well as selected poster communications will be published in the journal *Desalination and Water Treatment*. Complete instruction to authors is available at [www.deswater.com](http://www.deswater.com).

## **REFRESHMENTS AND LUNCHEs**

Coffee, tea, and soft drinks will be served during breaks of the scientific programme.

Lunch-buffet will be open from Monday through Thursday from 12:00 to 14:00 in the restaurant Bohemia of the Pyramida Hotel on the second floor.

Refreshments and lunches are included in the registration fee.

## **TRANSPORT**

### **Public transport**

In Prague, an integrated transport system (underground Metro, trams, and buses) operates without conductors. Tickets must be purchased in advance and stamped inside tram or bus, or before passing the gates of the Metro.

Metro stations are equipped with ticket machines. Tickets for 18 CZK for a single 20-min journey by tram or bus, or five-stop journey by Metro as well as transfer tickets for 26 CZK for a 75-min journey by all means of transport and 24-hour network ticket for 100 CZK are on sale at the airport, at railway stations, newspaper stands and tobacco shops, at hotel reception desks (including Pyramida hotel), etc. The Metro runs from 05:00 till midnight. Please, keep in mind that most tram and bus lines operate in the time of conference differently than shown in maps of Prague, since important junctions and roads near the conference location are closed due to construction activities.

### **Taxi**

The fare is 28 CZK (maximum) per kilometre and 40 CZK (maximum) is the boarding fee within the city boundaries (2009 prices). We recommend checking the fare before entering a taxi.

### **Air and railway transport**

The international airport Praha is situated about 20 km from the city centre. To reach the airport from Pyramida hotel, we recommend tram 22 or 36 (57 at night) in direction of Bílá Hora or Vypich as far as Vypich and from there bus No. 179 (510 at night). From city centre, bus No. 119 is recommended for connection from the “Dejvická” Metro station (line A).

Express bus line AE connects the airport with the “Dejvická” Metro station and main railway station (Praha hlavní nádraží) in 30-min intervals. Bus fare: 50 CZK (30 CZK from Dejvická) in the bus, 32 CZK at the counter in railway station.

Buses operated by the CEDAZ Co. run to the airport from the city terminal near the Metro station “Náměstí Republiky” (line B) in 30-min intervals. Bus fare: 120 CZK.

International trains arrive at and leave from the following stations: Praha, hlavní nádraží (Main Station; Metro line C), Praha – Holešovice (Metro line C, “Nádraží Holešovice”), and Praha – Smíchov (Metro line B, “Smíchovské nádraží”).



## **SOCIAL EVENTS**

### **Sunday, 7 June**

- 14:00 – 19:00 Registration, refreshment  
19:00 – 21:00 Welcome party takes place for all participants of the conference in the Pyramida Hotel.

### **Monday, 8 June**

Moravian evening, wine and cheese tasting with short cultural programme

### **Tuesday, 9 June**

Czech evening with Czech beer and cocktail snack

### **Wednesday, 10 June**

- 17:00 possibility to visit Břevnov Monastery  
(it is necessary to order at registration desk)  
Břevnov Monastery -archabbey- is the oldest monastery in Bohemia. It was founded by St. Adalbert and Boleslav II in 993 for the order of Benedictines. Its current Baroque appearance is a work of K. I. Dienzenhofer from the 18th century.
- 18:30 – 22:00 Slavonic evening in the Břevnov Monastery, Markétská str. 28/1, Prague 6 - Břevnov

### **Thursday, 11 June**

- 16:15 Farewell drink

# CONFERENCE SCHEDULE

## SUNDAY, 7 June

14:00 – 19:00 On site registration

19:00 – 21:00 **Welcome reception**

## MONDAY, 8 June

8:00 – 16:00 Registration (*continued*)

9:30 – 10:00 **Opening of the Conference**

10:00 – 10:40 PL 01  
**H. Strathmann** (*Germany*)

10:40 – 11:00 *Coffee break*

### Lecture Session A

11:00 – 11:35 KL 01  
**V.V. Nikonenko** (*Russia*)

11:35 – 12:00 SL A01  
**N.P. Berezina** (*Russia*)

### Lecture Session E

KL 02  
**V.V. Teplakov** (*Russia*)

SL E01  
**E. Nagy** (*Hungary*)

12:00 – 14:00 *Lunch*

### Workshop

14:00 – 14:25 SL F07  
**I.A. Evdokimov** (*Russia*)

14:25 – 14:50 SL D12  
**M. Matsumoto** (*Japan*)

14:50 – 15:15 SL D13  
**E. Polom** (*Poland*)

15:15 – 15:40 SL B07  
**H. Šimová** (*Czech Republic*)

SL E02  
**P. Izák** (*Czech Republic*)

SL E03  
**P. Cserjési** (*Hungary*)

SL E05  
**U.K. Kochnev** (*Russia*)

SL E06  
**A. El-Gendi** (*France*)

15:40 – 16:00 *Coffee break*

16:00 – 17:15 SL F15  
**O.B. Dymar** (*Belarus*)

SL F19  
**A.K. Agrawal** (*India*)

SL B09  
**R. Topchieva** (*Czech Republic*)

SL D02  
**T. Kutal** (*Czech Republic*)

17:30 – 19:00 **Poster session I PC01-PC43**

16:00 – 16:25 SL E07  
**C.L. Li** (*France*)

16:25 – 16:50 SL E08  
**A. Szép** (*Hungary*)

16:50 – 17:15 SL E09  
**K. Dudzinski** (*Poland*)

## TUESDAY, 9 June

8:30 – 9:10	PL 02 <b>E. Drioli</b> ( <i>Italy</i> )	
9:10 – 9:50	PL 03 <b>G.M Rios</b> ( <i>France</i> )	
9:50 – 10:10	<i>Coffee break</i>	
	<b>Lecture Session B</b>	<b>Lecture Session D</b>
10:10 – 10:35	SL B02 <b>S. Shishkina</b> ( <i>Russia</i> )	SL D01 <b>H. Zerze</b> ( <i>Turkey</i> )
10:35 – 11:00	SL B03 <b>Y. Zhang</b> ( <i>P.R. China</i> )	SL D03 <b>J. Llanos</b> ( <i>Spain</i> )
11:00 – 11:25	SL B06 <b>T. Eliseeva</b> ( <i>Russia</i> )	SL D04 <b>L. Yilmaz</b> ( <i>Turkey</i> )
11:25 – 11:50	SL B08 <b>M. López Garcia</b> ( <i>Spain</i> )	SL D15 <b>K. Friess</b> ( <i>Czech Republic</i> )
11:50 – 12:15	SL E18 <b>Q. Li</b> ( <i>Denmark</i> )	SL D21 <b>S. Guedidi</b> ( <i>France</i> )
12:15 – 14:00	<i>Lunch</i>	
	<b>Session A</b>	<b>Session D</b>
14:00 – 14:25	SL A02 <b>J. Křivčík</b> ( <i>Czech Republic</i> )	SL D06 <b>W. Kujawski</b> ( <i>Poland</i> )
14:25 – 14:50	SL A03 <b>S. Koter</b> ( <i>Poland</i> )	SL D07 <b>L. Hornyák</b> ( <i>Hungary</i> )
14:50 – 15:15	SL A04 <b>J. Žitka</b> ( <i>Czech Republic</i> )	SL E04 <b>A. Dobrak</b> ( <i>Belgium</i> )
15:15 – 15:35	<i>Coffee break</i>	
15:35 – 16:00	SL E13 <b>A.B. Yaroslavtsev</b> ( <i>Russia</i> )	SL D05 <b>S. Lee</b> ( <i>Korea</i> )
16:00 – 16:25	SL A06 <b>M. Paidar</b> ( <i>Czech Republic</i> )	SL D17 <b>F. Toman</b> ( <i>Czech Republic</i> )
16:25 – 16:50	SL A07 <b>Z. Palatý</b> ( <i>Czech Republic</i> )	SL D19 <b>Z. Kovacs</b> ( <i>Germany</i> )
16:50 – 17:15	SL B01 <b>Ph. Sistat</b> ( <i>France</i> )	SL D20 <b>M. Stoller</b> ( <i>Italy</i> )
17:30 – 19:00	<b>Poster session II PC44-PC83</b>	

## WEDNESDAY, 10 June

8:30 – 9:10 PL 04  
**V.I. Zabolotsky** (*Russia*)

9:10 – 9:50 **Panel Discussion**

9:50 – 10:10 *Coffee break*

### Lecture Session D

10:10 – 10:35

SL D10  
**A. Figoli** (*Italy*)

10:35 – 11:00

SL B05  
**M. Gloede** (*Germany*)

11:00 – 11:25

SL D08  
**Zs. Molnár** (*Hungary*)

11 :25 – 11 50

SL D09  
**J.M. Benito** (*Spain*)

11 :50 – 12 :15

SL E12  
**P. Holeček** (*Czech Republic*)

### Lecture Session F

SL F02

**V. Freger** (*Israel*)

SL F03

**M. Kutylowska** (*Poland*)

SL F11

**E. Cséfalvay** (*Hungary*)

SL F12

**S.I.S. Pinto** (*Portugal*)

SL F05

**P.T. Nguyen** (*France*)

12:15 – 14:00

*Lunch*

### Lecture Session C

14:00 – 14:25

SL B04  
**K. Bélafi-Bakó** (*Hungary*)

14:25 – 14:50

SL C01  
**J.-U. Rype** (*Denmark*)

14:50 – 15:15

SL C02  
**M. Weyd** (*Germany*)

### Lecture Session F

SL F01

**V. Roldughin** (*Russia*)

SL F08

**H. Guo** (*Germany*)

SL F10

**N. Boucif** (*France*)

15:15 – 15:35

*Coffee break*

15:35 – 16:00

SL C03  
**J. Thomas** (*Czech Republic*)

16:00 – 16:25

SL C04  
**Y. Tajitsu** (*Japan*)

16:25 – 16:50

SL C05  
**Y.H. Lee** (*Korea*)

16:50 – 17:15

SL C06  
**N. Kabay** (*Turkey*)

19:00 – 22:00

**Evening Party**

SL F13

**D. Tvrzník** (*Czech Republic*)

SL F14

**J. Wang** (*Germany*)

SL F16

**A. Filippov** (*Russia*)

SL F17

**R. Kodým** (*Czech Republic*)

## THURSDAY, 11 June

	<b>Lecture Session D</b>	<b>Lecture Session E</b>
8:55 – 9:20	SL D11 <b>I. Vorotyntsev</b> ( <i>Russia</i> )	SL E15 <b>A. Chwojnowski</b> ( <i>Poland</i> )
9:20 – 9:45	SL D16 <b>E. Szentgyörgyi</b> ( <i>Hungary</i> )	SL E19 <b>S.A. Chizhik</b> ( <i>Belarus</i> )
9:45 – 10:10	SL D22 <b>A. Netrusov</b> ( <i>Russia</i> )	SL E14 <b>Yu.M. Volkovich</b> ( <i>Russia</i> )
10:10 – 10:30	<i>Coffee break</i>	
	<b>Lecture Session F</b>	<b>Lecture Session F</b>
10:30 – 10:55	SL D18 <b>O.L. Amosova</b> ( <i>Russia</i> )	SL D14 <b>Sz. Kertész</b> ( <i>Hungary</i> )
10:55 – 11:20	SL F04 <b>W. Lu</b> ( <i>France</i> )	SL E11 <b>Š. Schlosser</b> ( <i>Slovak Republic</i> )
11:20 – 11:45	SL E10 <b>P. Mazur</b> ( <i>Czech Republic</i> )	SL F20 <b>L. Novák</b> ( <i>Czech Republic</i> )
11:45 – 12:10	SL F06 <b>I.A. Evdokimov</b> ( <i>Russia</i> )	
12:15 – 14:00	<i>Lunch</i>	
14:00 – 14:40	<b>Closing lecture PL 05</b> <b>M. Wessling</b> ( <i>The Netherlands</i> )	
14:40 – 15:10	<b>Closing ceremony</b> *	
15:10	<b>Farewell drink</b>	

\* International Commission of the Organizing Committee of PERMEA 2009 will evaluate contributions of PhD students and young scientists. The chosen works will be awarded during the closing ceremony.

# SESSION TIMETABLE

## MONDAY, 8 June

09:30 OPENING

Opening addresses

10:00 OPENING LECTURE PL 01

H. Strathmann (*Germany*)

Electrodialysis, a mature technology with a multitude of new applications

10:40 – 11:00 *Coffee break*

## LECTURE SESSION A

### ELECTROMEMBRANE PROCESSES, ION EXCHANGE MEMBRANES

11:00 **Keynote lecture KL 01**

V.V. Nikonenko, N.D. Pismenskaya, E.I. Belova, V.I. Zabolotsky, C. Larchet, G. Pourcelly (*Russia*)

Effect of membrane surface properties on the membrane behavior in electrodialysis

11:35 **Special lecture SL A01**

N.P. Berezina, A.A.-R. Sytcheva, S.V. Timofeyev, S.A. Shkirskaya, I.V. Falina (*Russia*)

Morphology transitions and electrotransport phenomena in the nanocomposites based on the perfluorinated sulfocationic membranes MF-4SC incorporating polyaniline

### Workshop – MEMBRANE OPERATION AT DAIRY TECHNOLOGIES

14:00 **Workshop special lecture SL F07**

I.A. Evdokimov, D.N. Volodin, A.S. Bessonov, A.A. Donskih (*Russia*)

Demineralization of different milk whey kinds

14:25 **Workshop special lecture SL D12**

M. Matsumoto, W. Hasegawa, K. Kondo (*Japan*)

Separation of lactic acid with hollow fiber supported liquid membranes based on ionic liquids

14:50 **Workshop special lecture SL D13**

E. Polom (*Poland*)

The pressure membrane techniques as BAT in dairy industry

15:15 **Workshop special lecture SL B07**

H. Šímová, V. Kysela, A. Černín (*Czech Republic*)

Demineralization of natural sweet whey by electrodialysis at pilot-plant scale

15:40 – 16:00 *Coffee break*

**16:00 Workshop special lecture SL F15**

– O.B. Dymar (*Belarus*)

**17:15** Whey treatment: current status and perspectives of market development in the Republic of Belarus

**Workshop special lecture SL F19**

A.K. Agrawal (*India*)

Evaluation on economics of ash removal from whey protein by ion exchange membrane

**Workshop special lecture SL B09**

R. Topchieva (*Czech Republic*)

Application of electromembrane processes in dairy industry

**Workshop special lecture SL D02**

T. Kutal, P. Horecký (*Czech Republic*)

Process water and waste water treatment for dairy

**17:30 – 19:00 POSTER SESSION I**

PC 01 – PC 43

## **MONDAY, 8 June**

### **LECTURE SESSION E**

#### **MEMBRANE MATERIALS, MEMBRANE PREPARATION AND CHARACTERIZATION**

**11:00 Keynote lecture KL 02**

V. Tepliakov, O. Malykh, E. Favre, I. Beckman (*Russia*)

Polymeric materials for membrane: new aspects of empirical approach for prediction of gas permeability parameters

**11:35 Special lecture SL E01**

E. Nagy (*Hungary*)

The effect of the concentration polarization and the membrane layer mass transport on the membrane separation

**12:00 – 14:00 Lunch**

**14:00 Special lecture SL E02**

M. Kohoutová, A. Sikora, Š. Hovorka, A. Randová, J. Schauer, P. Izák (*Czech Republic*)

Influence of ionic liquid content on properties of dense polymer membranes

**14:25 Special lecture SL E03**

P. Cserjési, N. Nemestóthy, K. Bélafi-Bakó (*Hungary*)

Application of phosphonium based ionic liquids as supported liquid membranes for gas separation

**15:50 Special lecture SL E05**

U.K. Kochnev, S.V. Vlasov, A.I. Vilensky, D.L. Zagorsky, M.A. Shamirkanov, B.V. Mchedlishvili (*Russia*)

The influence of orientation on the properties of polyethyleneterephthalate films irradiated with heavy ions

**15:15 Special lecture SL E06**

A. El-Gendi, D. Roizard, J. Grignard, E. Favre (*France*)

Investigations of rubbery copolyimides for the preparation of asymmetric pervaporation membranes

**15:40 – 16:00 Coffee break**

**16:00 Special lecture SL E07**

C.L. Li, D.M. Wang, A. Deratani, D. Quémener, J.Y. Lai (*France*)

New insight in tuning the morphology of poly(vinylidene) fluoride membranes

**16:25 Special lecture SL E08**

A. Szép, S. Kertész, Z. László, C. Hodúr (*Hungary*)

The hydrodynamic effect of microparticles on membrane resistance

**16:50 Special lecture SL E09**

K. Dudzinski, A. Chwojnowski, E. Lukowska, C. Wojciechowski (*Poland*)

Fabrication of the polyethersulfone membranes with broad open pores and sponge-like structure as future scaffold for cells and tissues cultures

**17:30 – 19:00 POSTER SESSION I**

PC 01 – PC 43



## TUESDAY, 9 June

- 08:30**     **Plenary lecture PL 02**  
E. Drioli (*Italy*)  
Membrane operations in redesigning process engineering
- 9:10**     **Plenary lecture PL 03**  
G.M. Rios (*France*)  
Enzymatic membrane reactors
- 9:50 – 10:10** *Coffee break*

### LECTURE SESSION B

#### ELECTRODIALYSIS, ELECTRODEIONIZATION, MEMBRANE ELECTROLYSIS

- 10:10**     **Special lecture SL B02**  
A. Dyukov, S. Shishkina (*Russia*)  
Electrodialysis of chloride solutions containing mercury (II) ions
- 10:35**     **Special lecture SL B03**  
Y. Zhang, B. Van der Bruggen, L. Pinoy, B. Meesschaert (*P. R. China*)  
Separation of small organic ions from salts by ion exchange membranes in electrodialysis
- 11:00**     **Special lecture SL B06**  
T. Eliseeva, E. Krisilova, V. Shaposhnik, A. Bukhovets (*Russia*)  
Recovery and concentration of amino acids by electrodialysis with bipolar membranes
- 11:25**     **Special lecture SL B08**  
M. López García (*Spain*)  
DOWTM EDI modules perform well at bioenergy combines in Scandinavia
- 11:50**     **Special lecture SL E18**  
Q. Li, Z. Gu, L.D. Aili, E. Christensen, N.J. Bjerrum (*Denmark*)  
Nafion-Polybenzimidazole-Zirconium Phosphate composite membranes for fuel cell and steam electrolyser applications

**12:15 – 14:00** *Lunch*

### LECTURE SESSION A

#### ELECTROMEMBRANE PROCESSES, ION EXCHANGE MEMBRANES

- 14:00**     **Special lecture SL A02**  
J. Křivčík, J. Vladařová, J. Hadrava, A. Černín (*Czech Republic*)  
The effect of inorganic ion exchange resin on properties of heterogeneous ion exchange membrane
- 14:25**     **Special lecture SL A03**  
S. Koter, M. Kultys (*Poland*)  
Electric transport of sulfuric and phosphoric acids through anion exchange membranes in aqueous solutions

**14:50 Special lecture SL A04**

J. Žitka, M. Bleha, J. Schauer, M. Paidar, M. Plíšková, J. Mališ (*Czech Republic*)

Ion exchange membranes for fuel cells based on vinylphosphonic acid copolymers

**15:15 – 15:35 Coffee break**

**15:35 Special lecture SL E13**

A.B. Yaroslavtsev, I.A. Stenina, E.Yu. Voropaeva, A.A. Ilyina (*Russia*)

Composite membranes: structure, ion transport, applications

**16:00 Special lecture SL A06**

M. Paidar, J. Mališ, K. Bouzek (*Czech Republic*)

Behavior of Nafion membrane at elevated temperature and pressure

**16:25 Special lecture SL A07**

Z. Palatý, H. Bendová (*Czech Republic*)

Dialysis of aqueous solutions of nitric acid and ferric nitrate

**16:50 Special lecture SL B01**

– B. Ruiz, P. Huguet, Ph. Sístat, V.V. Nikonenko, G. Pourcelly (*France*)

**17:15** Intensification of electro dialysis: Mixed control mode with pulse electric field

**17:30 – 19:00 POSTER SESSION II**

PC 44 – PC 83

## TUESDAY, 9 June

### LECTURE SESSION D

#### MEMBRANE SEPARATION METHODS, TECHNOLOGICAL EQUIPMENT

**10:10 Special lecture SL D01**

H. Zerbe, C. Oktar Doğanay, H. Önder Özbelge, N. Bıçak, L. Yılmaz (*Turkey*)

Continuous boron removal from water by specially synthesized polymers via polymer enhanced ultrafiltration

**10:35 Special lecture SL D03**

J. Llanos, Á. Pérez, P. Cañizares (*Spain*)

Enhanced Cu/Zn separation and polymer regeneration by means of polymer supported ultrafiltration (PSU) and electrodeposition

**11:00 Special lecture SL D04**

H. Zerbe, C. Oktar Doğanay, H. Önder Özbelge, N. Bıçak, L. Yılmaz (*Turkey*)

Separation of chromate anion from aqueous solutions by a water soluble functional polymer via polymer enhanced ultrafiltration

**11:25 Special lecture SL D15**

K. Friess, B. Černochová, J. Jansen, V. Hynek, O. Vopička, M. Zgažar, M. Šípek (*Czech Republic*)

Sorption of C1-C6 alcohols in perfluorinated polymers

- 11:50 Special lecture SL D21**  
S. Guedidi, A. Deratani, C. Innocent, P. Déjardin, S. Roudesli (*France*)  
 Enzymes modified membranes by using polyelectrolyte layer
- 12:15 – 14:00 Lunch**
- 14:00 Special lecture SL D06**  
 I. Rutkiewicz, W. Kujawski, J. Namieśnik (*Poland*)  
 Pervaporation of volatile organohalogen compounds through polydimethylsiloxane membrane
- 14:25 Special lecture SL D07**  
L. Hornyák, E. Márki, K. Korány, Gy. Vatai (*Germany*)  
 Recovery of n-butyl-alcohol using pervaporation membrane
- 14:50 Special lecture SL E04**  
A. Dobrak, I. Vankelecom, B. Van der Bruggen (*Belgium*)  
 Development of PDMS membranes for application in both nanofiltration and pervaporation
- 15:15 – 15:35 Coffee break**
- 15:35 Special lecture SL D05**  
 Ch. Park, S. Kim, S. Lee, M. Seuk Chun (*Korea*)  
 Ballast water treatment by membrane filtration for industrial applications
- 16:00 Special lecture SL D17**  
F. Toman (*Czech Republic*)  
 Membrane processes in water treatment at the uranium chemical mill
- 16:25 Special lecture SL D19**  
Z. Kovacs, M. Ebrahimi, P. Czermak (*Germany*)  
 Optimal operational design in batch diafiltration
- 16:50 Special lecture SL D20**  
 –  
M. Stoller (*Italy*)
- 17:15**  
 Effective fouling control on a NF membrane module: A three year long case study
- 17:30 – 19:00 POSTER SESSION II**
- PC 44 – PC 83**

## WEDNESDAY, 10 June

### 08:30 Plenary lecture PL 04

V.I. Zabolotsky, V.V. Nikonenko (*Russia*)

The perspectives in the development of electromembrane separation processes

### 9:10 Panel discussion

Membrane activities in Europe and Visegrad Countries

9:50 – 10:10 *Coffee break*

## LECTURE SESSION D

### MEMBRANE SEPARATION METHODS, TECHNOLOGICAL EQUIPMENT

#### 10:10 Special lecture SL D10

A. Figoli, E. Mascheroni, M. Rollini, S. Limbo, S. Talarico, L. Piergiovanni, E. Drioli (*Italy*)

Bio-microcapsules preparation by membrane process for a controlled release of natural antimicrobials

#### 10:35 Special lecture SL B05

M. Gloede, T. Melin (*Germany*)

Separation of the platform chemical itaconic acid out of fermentation broth

#### 11:00 Special lecture SL D08

Zs. Molnár, Sz. Bánvölgyi, Á. Kozák, I. Kiss, E. Békássy-Molnár, Gy. Vatai (*Hungary*)

Application of membrane processes for concentration of raspberry (*Rubus idaeus* L.) juice

#### 11:25 Special lecture SL D09

M.O. Ruiz, I. Escudero, J.M. Benito, P. Sanchez (*Spain*)

Selective separation of amino acids by reactive extraction with TOMAC in hollow fiber contactors

#### 11:50 Special lecture SL E12

V. Šťovíček, P. Holeček (*Czech Republic*)

The past and present treatment of water used for the brewing of Pilsner Urquell beer

12:15 – 14:00 *Lunch*

## LECTURE SESSION C

### HYBRID MEMBRANE PROCESSES, POWER TECHNOLOGIES

**14:00 Special lecture SL B04**

K. Bélafi-Bakó, P. Bakonyi, N. Nemestothy, Z. Pientka, J. Žitka (*Hungary*)  
Biohydrogen production in integrated system

**14:25 Special lecture SL C01**

J.-U. Ryppe, A. Garde (*Denmark*)  
Combining membrane separation technology and fermentation processes for improved performance

**14:50 Special lecture C02**

M. Weyd, H. Richter, I. Voigt, E. Tusel, H. Brüscke, J.-Th. Kühnert (*Germany*)  
Energy efficient dewatering of ethanol by industrial scale NaA-zeolite membranes

*15:15 – 15:35 Coffee break*

**15:35 Special lecture SL C03**

V. Slivka, J. Vidlář, J. Thomas (*Czech Republic*)  
Mine waters in the Czech Republic – current situation and trend development

**16:00 Special lecture SL C04**

Y. Tajitsu (*Japan*)  
Piezoelectricity of ferroelectret film

**16:25 Special lecture SL C05**

Y.H. Lee, S. Lee  
Fermentative methane gas production from municipal sewage using anaerobic membrane bioreactor

**16:50 Special lecture SL C06**

N. Kabay, E. Guler, M. Yuksel, M. Bryjak, S. Schlosser (*Turkey*)  
Integrated solution for boron removal from seawater using RO process and sorption-membrane filtration hybrid method

**19:00 – 22:00 Evening party**

## WEDNESDAY, 10 June

### LECTURE SESSION F

#### TRANSPORT ACCROSS MEMBRANES, MATHEMATICAL STUDIES

**10:10 Special lecture SL F02**

V. Freger (*Israel*)

Understanding functioning of RO and NF composites: Theoretical analysis and toplayer characterization

**10:35 Special lecture SL F03**

M. Kabsch-Korbutowicz, M. Kutylowska (*Poland*)

Short-range forecast of permeate flux in detergent waste water ultrafiltration

**11:00 Special lecture SL F11**

E. Cséfalvay, P. Mizsey (*Hungary*)

Modelling the transport across nanofiltration and reverse osmosis membranes in case of heavy metal containing solutions

**11:25 Special lecture SL F12**

S.I.S. Pinto, J.M. Miranda, J.B.L.M. Campos (*Portugal*)

Numerical study of the effect of a charged membrane in the fractionation of two proteins with opposite charges

**11:50 Special lecture SL F05**

P.T. Nguyen, D. Roizard, E. Favre, D. Thomas (*France*)

Investigations of direct methods for the measurement of the mass transfer coefficient of hollow fiber membrane contactor

*12:15 – 14:00 Lunch*

### LECTURE SESSION F

#### TRANSPORT ACCROSS MEMBRANES, MATHEMATICAL STUDIES

**14:00 Special lecture SL F01**

V. Roldughin, V. Zhdanov (*Russia*)

Effect of surface forces on gas mixture separation in nanoporous bodies

**14:25 Special lecture SL F08**

H. Guo, M. Ulbricht (*Germany*)

A mechanism study of entrapment strategy for hydrophilic modification of polypropylene membrane surface

**14:50 Special lecture SL F10**

N. Boucif, P.T. Nguyen, D. Roizard, E. Favre (*France*)

Theoretical studies on carbon dioxide removal from a gas stream in hollow fiber membrane contactors

*15:15 – 15:35 Coffee break*

**15:35 Special lecture SL F13**

D. Tvrzník, L. Machuča, A. Černín (*Czech Republic*)

Mathematical model of mass transfer in an electro dialyzer with net-like spacers

**16:00 Special lecture SL F14**

J. Wang, E. von Lieres, M. Ulbricht (*Germany*)

Investigation and model based quantification of the influence of membrane modules on protein separation performance with porous membrane adsorbers

**16:25 Special lecture SL F16**

A. Filippov, S. Vasin, N. Kononenko (*Russia*)

Modelling asymmetry of transport properties of modified ultrafiltration membranes

**16:50 Special lecture SL F17**

R. Kodým, F. Vlasák, D. Šnita, A. Černín, K. Bouzek (*Czech Republic*)

Progress in the mathematical modeling of the flow hydrodynamics in the spacer filled channel

## THURSDAY, 11 June

### LECTURE SESSION D

#### MEMBRANE SEPARATION METHODS, TECHNOLOGICAL EQUIPMENT

**8:55 Special lecture SL D11**

I. Vorotyntsev, P. Drozdov, V. Vorotyntsev (*Russia*)

Absorbing pervaporation a new type of membrane contactors for gas separation

**9:20 Special lecture SL D16**

E. Szentgyörgyi, N. Nemesóthy, K. Bélafi-Bakó (*Hungary*)

Biomethane production by gas separation membranes

**9:45 Special lecture SL D22**

A. Netrusov, V. Tepliakov (*Russia*)

Membrane-assisted separation of microbial liquid and gaseous fuels from renewable sources

*10:10– 10:30 Coffee break*

### LECTURE SESSION F

#### TRANSPORT ACCROSS MEMBRANES, MATHEMATICAL STUDIES

**10:30 Special lecture SL D18**

O.L. Amosova, O.V. Malykh, V.V. Tepliakov (*Russia*)

Integrated membrane/PSA systems for hydrogen recovery from gas mixtures

**10:55 Special lecture SL F04**

W. Li, G. Grevillot, L. Muhr (*France*)

Electrochemical control of a pH gradient for biomolecules separations by ion exchange

**11:20 Special lecture SL E10**

P. Mazur, M. Paidar, K. Bouzek (*Czech Republic*)

Preparation of the gas diffusion electrodes for high temperature PEM type fuel cells

**11:45 Special lecture SL F06**

A.A. Borisenko, E.A. Shamanaeva, I.A. Evdokimov, A.A. Bratsikhin (*Russia*)

Optimization of water electrochemical activation in element PEM-3

*12:10 – 14:00 Lunch*



## THURSDAY, 11 June

### LECTURE SESSION E

#### MEMBRANE MATERIALS, MEMBRANE PREPARATION AND CHARACTERIZATION

**8:55 Special lecture SL E15**

A. Chwojnowski, C. Wojciechowski, K. Dudziński, E. Łukowska (*Poland*)  
Modification of the membrane structure by means of a weak solvent of polymers

**9:20 Special lecture SL E19**

S.A. Chizhik (*Belarus*)  
Local probe analysis of membranes

**9:45 Special lecture SL E14**

Yu.M. Volkovich, V. S Bagotsky, V.E. Sosenkin, A.V. Sakars (*Russia*)  
The method of standard contact porosimetry for study of membranes and other objects

*10:10 – 10:30 Coffee break*

### LECTURE SESSION F

#### TRANSPORT ACCROS MEMBRANES, MATHEMATICAL STUDIES

**10:30 Special lecture SL D14**

Sz. Kertész, S. Beszédes, J. Csanádi, G. Szabó, C. Hodúr (*Hungary*)  
Comparison between stirred and vibrated UF modules

**10:55 Special lecture SL E11**

Š. Schlosser, M. Blahušiak, J.Marták (*Slovak Republic*)  
Hybrid processes with membranes in water treatment and biotechnology

**11:20 Special lecture SL F20**

L. Novák, A. Černín (*Czech Republic*)  
Actual position of electromembrane processes on the world desalination market and future research and development potential in this field

*12:15 – 14:00 Lunch*

**14:00 Closing lecture PL 05**

M. Wessling, P. Długolecki, D.C. Nijmeijer (*The Netherlands*)  
Ion exchange materials for energy production

**14:40 Closing ceremony**

**15:10 Farewell drink**

## LIST OF PLENARY AND KEYNOTE LECTURES

- PL 01** Opening lecture  
H. Strathmann (*Germany*)  
Electrodialysis, a mature technology with a multitude of new applications
- PL 02** E. Drioli (*Italy*)  
Membrane operations in redesigning process engineering
- PL 03** G. Rios (*France*)  
Enzymatic membrane reactors
- PL 04** V.I. Zabolotsky, V.V. Nikonenko (*Russia*)  
The perspectives in the development of electromembrane separation processes
- PL 05** Closing lecture  
M. Wessling (*The Netherlands*)  
Ion exchange membranes for energy applications
- KL 01** V.V. Nikonenko, N.D. Pismenskaya, E.I. Belova, V.I. Zabolotsky, C. Larchet (*Russia*)  
Effect of membrane surface properties on the membrane behavior in electrodialysis
- KL 02** V. Tepliakov, O.Malykh, E.Favre, I.Beckman (*Russia*)  
Polymeric materials for membrane: new aspects of empirical approach for prediction of gas permeability parameters

## LIST OF SPECIAL LECTURES

- SL A01 N.P. Berezina, A.A.-R. Sytcheva, S.V. Timofeyev, S.A. Shkirskaaya, I.V. Falina (*Russia*)  
Morphology transitions and electrotransport phenomena in the nanocomposites based on the perfluorinated sulfocationic membranes MF-4SC incorporating polyaniline
- SL A02 J. Křivčík, J. Vladařová, J. Hadrava, A. Černín (*Czech Republic*)  
The effect of inorganic ion exchange resin on properties of heterogeneous ion exchange membrane
- SL A03 S. Koter, M. Kultys (*Poland*)  
Electric transport of sulfuric and phosphoric acids through anion exchange membranes in aqueous solutions
- SL A04 J. Žitka, M. Bleha, J. Schauer, M. Paidar, M. Plíšková, J. Mališ (*Czech Republic*)  
Ion exchange membranes for fuel cells based on vinylphosphonic acid copolymers
- SL A06 M. Paidar, J. Mališ, K. Bouzek (*Czech Republic*)  
Behavior of Nafion membrane at elevated temperature and pressure
- SL A07 Z. Palatý, H. Bendová (*Czech Republic*)  
Dialysis of aqueous solutions of nitric acid and ferric nitrate
- SL B01 B. Ruiz, P. Huguet, Ph. Sistať, V.V. Nikonenko, G. Pourcelly (*France*)  
Intensification of electro dialysis: Mixed control mode with pulse electric field
- SL B02 A. Dyukov, S. Shishkina (*Russia*)  
Electrodialysis of chloride solutions containing mercury (II) ions
- SL B03 Y. Zhang, B. Van der Bruggen, L. Pinoy, B. Meesschaert (*P. R. China*)  
Separation of small organic ions from salts by ion exchange membranes in electro dialysis
- SL B04 K. Bélafi-Bakó, P. Bakonyi, N. Nemestothy, Z. Pientka, J. Žitka (*Hungary*)  
Biohydrogen production in integrated system
- SL B05 M. Gloede, T. Melin (*Germany*)  
Separation of the platform chemical itaconic acid out of fermentation broth
- SL B06 T. Eliseeva, E. Krisilova, V. Shaposhnik, A. Bukhovets (*Russia*)  
Recovery and concentration of amino acids by electro dialysis with bipolar membranes
- SL B07 H. Šimová, V. Kysela, A. Černín (*Czech Republic*)  
Demineralization of natural sweet whey by electro dialysis at pilot-plant scale
- SL B08 M. López Garcia (*Spain*)  
DOW™ EDI modules perform well at bioenergy combines in Scandinavia
- SL B09 R. Topchieva (*Czech Republic*)  
Application of electromembrane processes in dairy industry
- SL C01 J.-U. Rype, A. Garde (*Denmark*)  
Combining membrane separation technology and fermentation processes for improved performance

- SL C02 M. Weyd, H. Richter, I. Voigt, E. Tusel, H. Brüschke, J.-Th. Kühnert (*Germany*)  
Energy efficient dewatering of ethanol by industrial scale NaA-zeolite membranes
- SL C03 V. Slivka, J. Vidlář, J. Thomas (*Czech Republic*)  
Mine waters in the Czech Republic – current situation and trend development
- SL C04 Y. Tajitsu (*Japan*)  
Piezoelectricity of ferroelectric film
- SL C05 Y.H. Lee, S. Lee (*Korea*)  
Fermentative methane gas production from municipal sewage using anaerobic membrane bioreactor
- SL C06 N. Kabay, E. Guler, M. Yuksel, M. Bryjak, S. Schlosser (*Turkey*)  
Integrated solution for boron removal from seawater using RO process and sorption-membrane filtration hybrid method
- SL D01 H. Zerze, C. O. Doğanay, H.Ö. Özbelge, N. Bıçak, L. Yılmaz (*Turkey*)  
Continuous boron removal from water by specially synthesized polymers via polymer enhanced ultrafiltration
- SL D02 T. Kutal, P. Horecký (*Czech Republic*)  
Process water and waste water treatment for dairy
- SL D03 J. Llanos, Á. Pérez, P. Cañizares (*Spain*)  
Enhanced Cu/Zn separation and polymer regeneration by means of polymer supported ultrafiltration (PSU) and electrodeposition
- SL D04 H. Zerze, C. O. Doğanay, H.Ö. Özbelge, N. Bıçak, L. Yılmaz (*Turkey*)  
Separation of chromate anion from aqueous solutions by a water soluble functional polymer via polymer enhanced ultrafiltration
- SL D05 C. Park, S. Kim, S. Lee, M. S. Chun (*Korea*)  
Ballast water treatment by membrane filtration for industrial applications
- SL D06 I. Rutkiewicz, W. Kujawski, J. Namieśnik (*Poland*)  
Pervaporation of volatile organohalogen compounds through polydimethylsiloxane membrane
- SL D07 L. Hornyák, E. Márki, K. Korány, Gy. Vatai (*Germany*)  
Recovery of *n*-butylalcohol using pervaporation membrane
- SL D08 Zs. Molnár, Sz. Bánvölgyi, Á. Kozák, I. Kiss, E. Békássy-Molnár, Gy. Vatai (*Hungary*)  
Application of membrane processes for concentration of raspberry (*Rubus Ideaus* L.) juice
- SL D09 M.O. Ruiz, I. Escudero, J.M. Benito, P. Sanchez (*Spain*)  
Selective separation of amino acids by reactive extraction with TOMAC in hollow fiber contactors
- SL D10 A. Figoli, E. Mascheroni, M Rollini, S. Limbo, S. Talarico, L. Piergiovanni, E. Drioli (*Italy*)  
Bio-microcapsules preparation by membrane process for a controlled release of natural antimicrobials
- SL D11 I. Vorotyntsev, P. Drozdov, V. Vorotyntsev (*Russia*)  
Absorbing pervaporation a new type of membrane contactors for gas separation

- SL D12 M. Matsumoto, W. Hasegawa, K. Kondo (*Japan*)  
Separation of lactic acid with hollow fiber supported liquid membranes based on ionic liquids
- SL D13 E. Polom (*Poland*)  
The pressure membrane techniques as BAT in dairy industry
- SL D14 Sz. Kertész, S. Beszédes, J. Csanádi, G. Szabó, C. Hodúr (*Hungary*)  
Comparison between stirred and vibrated UF modules
- SL D15 K. Friess, B. Černochová, J. Jansen, V. Hynek, O. Vopička, M. Zgažar, M. Šípek (*Czech Republic*)  
Sorption of C1-C6 alcohols in perfluorinated polymers
- SL D16 E. Szentgyörgyi, N. Nemesóthy, K. Bélafi-Bakó (*Hungary*)  
Biomethane production by gas separation membranes
- SL D17 F. Toman (*Czech Republic*)  
Membrane processes in water treatment at the uranium chemical mill
- SL D18 O.L. Amosova, O.V. Malykh, V.V. Teplakov (*Russia*)  
Integrated membrane/psa systems for hydrogen recovery from gas mixtures
- SL D19 Z. Kovacs, M. Ebrahimi, P. Czermak (*Germany*)  
Optimal operational design in batch diafiltration
- SL D20 M. Stoller (*Italy*)  
Effective fouling control on a NF membrane module: A three year long case study
- SL D21 S. Guedidi, A. Deratani, C. Innocent, P. Déjardin, S. Roudesli (*France*)  
Enzymes modified membranes by using polyelectrolyte layer
- SL D22 A. Netrusov, V. Teplakov (*Russia*)  
Membrane-assisted separation of microbial liquid and gaseous fuels from renewable sources
- SL E01 E. Nagy (*Hungary*)  
The effect of the concentration polarization and the membrane layer mass transport on the membrane separation
- SL E02 M. Kohoutová, A. Sikora, Š. Hovorka, A. Randová, J. Schauer, P. Izák (*Czech Republic*)  
Influence of ionic liquid content on properties of dense polymer membranes
- SL E03 P. Cserjési, N. Nemesóthy, K. Bélafi-Bakó (*Hungary*)  
Application of phosphonium based ionic liquids as supported liquid membranes for gas separation
- SL E04 A. Dobrak, I. Vankelecom, B. Van der Bruggen (*Belgium*)  
Development of PDMS membranes for application in both nanofiltration and pervaporation
- SL E05 U.K. Kochnev, S.V. Vlasov, A.I. Vilensky, D.L. Zagorsky, M.A. Shamirkanov, B.V. Mchedlishvili (*Russia*)  
The influence of orientation on the properties of polyethyleneterephthalate films irradiated with heavy ions
- SL E06 A. El-Gendi, D. Roizard, J. Grignard, E. Favre (*France*)  
Investigations of rubbery copolyimides for the preparation of asymmetric pervaporation membranes

- SL E07 C.L. Li, D.M. Wang, A. Deratani, D. Quémener, J.Y. Lai (*France*)  
New insight in tuning the morphology of poly(vinylidene) fluoride membranes
- SL E08 A. Szép, Sz. Kertész, Zs. László, C. Hodúr (*Hungary*)  
The hydrodynamic effect of microparticles on membrane resistance
- SL E09 K. Dudziński, A. Chwojnowski, E. Lukowska, C. Wojciechowski (*Poland*)  
Fabrication of the polyethersulfone membranes with broad open pores and sponge-like structure as future scaffold for cells and tissues cultures
- SL E10 P. Mazur, M. Paidar, K. Bouzek (*Czech Republic*)  
Preparation of the gas diffusion electrodes for high temperature PEM type fuel cells
- SL E11 Š. Schlosser, M. Blahušiak, J. Marták (*Slovak Republic*)  
Hybrid processes with membranes in water treatment and biotechnology
- SL E12 V. Šťoviček, P. Holeček (*Czech Republic*)  
The past and present treatment of water used for the brewing of Pilsner Urquell beer
- SL E13 A.B. Yaroslavtsev, I.A. Stenina, E.Yu. Voropaeva, A.A. Ilyina (*Russia*)  
Composite membranes: structure, ion transport, applications
- SL E14 Yu.M. Volkovich, V. S Bagotsky, V.E. Sosenkin, A.V. Sakars (*Russia*)  
The method of standard contact porosimetry for study of membranes and other objects
- SL E15 A. Chwojnowski, C. Wojciechowski, K. Dudziński, E. Lukowska (*Poland*)  
Modification of the membrane structure by means of a weak solvent of polymers
- SL E18 Q. Li, Z. Gu, L. D. Aili, E. Christensen, N. J. Bjerrum (*Denmark*)  
Nafion-Polybenzimidazole-Zirconium Phosphate composite membranes for fuel cell and steam electrolyser applications
- SL E19 S.A. Chizhik (*Belarus*)  
Local probe analysis of membranes
- SL F01 V. Roldughin, V. Zhdanov (*Russia*)  
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- SL F02 V. Freger (*Israel*)  
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- SL F03 M. Kabsch-Korbutowicz, M. Kutylowska (*Poland*)  
Short-range forecast of permeate flux in detergent waste water ultrafiltration
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- SL F05 P.T. Nguyen, D. Roizard, E. Favre, D. Thomas (*France*)  
Investigations of direct methods for the measurement of the mass transfer coefficient of hollow fiber membrane contactor
- SL F06 A.A. Borisenko, E.A. Shamanaeva, I.A. Evdokimov, A.A. Bratsikhin (*Russia*)  
Optimization of water electrochemical activation in element PEM-3

- SL F07 I.A. Evdokimov, D.N. Volodin, A.S. Bessonov, A.A. Donskih (*Russia*)  
Demineralization of different milk whey kinds
- SL F08 H. Guo, M. Ulbricht (*Germany*)  
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- SL F10 N. Boucif, P.T. Nguyen, D. Roizard, E. Favre (*France*)  
Theoretical studies on carbon dioxide removal from a gas stream in hollow fiber membrane contactors
- SL F11 E. Cséfalvay, P. Mizsey (*Hungary*)  
Modelling the transport across nanofiltration and reverse osmosis membranes in case of heavy metal containing solutions
- SL F12 S.I.S. Pinto, J.M. Miranda, J.B.L.M. Campos (*Portugal*)  
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- SL F13 D. Tvrzník, L. Machuča, A. Černín (*Czech Republic*)  
Mathematical model of mass transfer in an electro dialyzer with net-like spacers
- SL F14 J. Wang, E. von Lieres, M. Ulbricht (*Germany*)  
Investigation and model based quantification of the influence of membrane modules on protein separation performance with porous membrane adsorbers
- SL F15 O.B. Dymar (*Belarus*)  
Whey treatment: current status and perspectives of market development in the Republic of Belarus
- SL F16 A. Filippov, S. Vasin, N. Kononenko (*Russia*)  
Modelling asymmetry of transport properties of modified ultrafiltration membranes
- SL F17 R. Kodým, F. Vlasák, D. Šnita, A. Černín, K. Bouzek (*Czech Republic*)  
Progress in the mathematical modeling of the flow hydrodynamics in the spacer filled channel
- SL F19 A.K. Agrawal (*India*)  
Evaluation on economics of ash removal from whey protien by ion exchange membrane
- SL F20 L. Novák, A. Černín (*Czech Republic*)  
Actual position of electromembrane processes on the world desalination market and future research and development potential in this field

## LIST OF POSTER COMMUNICATIONS

- PC01 V. Vasileva, V. Zabolotsky, A. Zhiltsova, O. Grigorchuk  
The oscillation of concentration field at the membrane-solution interface and transport mechanisms under overlimiting current density
- PC02 M. Kultys, S. Koter  
Current voltage curves and the limiting current for the system: anion exchange membrane - acid and salt solutions
- PC03 N. Kononenko, N. Loza, S. Dolgoplov, M. Chernyaeva, S. Timofeev, L. Bobrova  
Characterization of the various modifications of perfluorinated sulphocationic MF-4SC membranes for fuel cells
- PC04 N. Kononenko, N. Berezina, N. Loza  
Voltammetric characteristics of MF-4SC membrane, modified by polyaniline
- PC05 L. Brožová  
Morphology and electrochemical properties of heterogeneous ion exchange membranes
- PC06 J. Kinčl, J. Cakl, R. Wakeman, H. Jiráňková, P. Doleček  
Characteristics of ion exchange and filtration process in the zeolite-enhanced membrane microfiltration
- PC07 J. Hnát, M. Paidar, K. Bouzek, J. Žitka, J. Schauer  
Novel alkaline polymer electrolyte for electrolytic splitting of water
- PC08 S. Koter, B. Gilewicz-Lukasik, Gy. Karlovits  
The application of electrochemical membrane reactor for hydrogenation of edible oils
- PC09 O.M. Kattan Readj, K. Nijmeijer, M. Wessling  
Electrodialysis for the production of building blocks for chemicals from protein sources
- PC10 L. Diblíková, L. Čurda, K. Homolová  
Electrodialysis in whey desalting process
- PC11 H. Bendová, Z. Palatý  
Transport of sulphuric acid and cupric sulphate in continuous dialyzer
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