

MEMBRANE PROCESS MODELING

Web conference in celebration of the 60th anniversary of
Professor A.N. Filippov

Scientific Program

Thursday, December 3

11⁰⁰-11¹⁰

OPENING CEREMONY

Session 1. **11.10 A.M. – 1.15 P.M. (MOSCOW TIME)**

Chairman: Boris Zaltzman

11¹⁰-11³⁰ **Victor Starov** (*Loughborough University, Loughborough, UK*)

**CONTRIBUTION OF PROFESSOR ANATOLY FILIPPOV TO MODELLING OF
MEMBRANE PROCESSES**

KEYNOTE LECTURES

11³⁵-11⁵⁵ **Reinhard Miller, Valentin B. Fainerman, Nenad Mucic, Aliyar Javadi, Libero**

Liggieri, Francesca Ravera, Giuseppe Loglio, Alexander V. Makievski and Emanuel

Schneck (*Technische Universität Darmstadt, Darmstadt, Germany; SINTERFACE*

Technologies, Berlin, Germany; University of Novi Sad, Novi Sad, Serbia; Helmholtz-

Zentrum Dresden-Rossendorf (HZDR), Institute of Fluid Dynamics, Dresden, Germany;

Institute of Condensed Matter Chemistry and Technologies for Energy, Genoa, Italy)

**STRUCTURE OF SURFACTANT ADSORPTION LAYERS AT THE WATER/ALKANE
INTERFACE – COMPETITIVE AND COOPERATIVE EFFECTS**

Music break

12¹⁰-12³⁰ **Maarten Biesheuvel, Slawomir Porada, and Jouke Dykstra** (*Wetsus, European*

Centre of Excellence for Sustainable Water Technology; Wageningen University, Wageningen,

The Netherlands)

THE ORIGIN OF OSMOSIS AND ELECTRO-OSMOSIS

ORAL PRESENTATIONS

12³⁵-12⁵⁰ **Michele Tedesco** (*Wetsus, European Centre of Excellence for Sustainable Water*

Technology, Leeuwarden, The Netherlands)

**UNDERSTANDING THE ROLE OF MEMBRANE THICKNESS IN ELECTRO-
MEMBRANE PROCESSES VIA NERNST-PLANCK APPROACH**

12⁵⁵-1¹⁰ **Jouke Dykstra and Maarten Biesheuvel** (*Wageningen University, Wageningen;*

Wetsus, European Centre of Excellence for Sustainable Water Technology, Leeuwarden, The

Netherlands)

**PROTON TRANSPORT ACROSS ANION EXCHANGE MEMBRANES IN
ELECTROCHEMICAL SYSTEMS**

Session 2. 2.00-4.30 P.M. (MOSCOW TIME)

Chairman: Andrey Yaroslavtsev

KEYNOTE LECTURES

2⁰⁰-2²⁰ Victor Nikonenko, Dmitrii Butylskii, Semyon Mareev, Andrey Kislyi, Natalia Pismenskaya, and Pavel Apel (*Kuban State University, Krasnodar; Joint Institute for Nuclear Research, Dubna, Russia*)

HIGHLY SELECTIVE SEPARATION OF CATIONS WITH THE SAME CHARGE BY A NEW MEMBRANE METHOD USING SIMULTANEOUSLY APPLIED ELECTRIC AND PRESSURE FIELDS

2²⁵-2⁴⁵ Ilya Ryzhkov, Atrur Krom, Mikhail Simunin (*Institute of Computational Modelling SB RAS; Siberian Federal University, Krasnoyarsk, Russia*)

THEORY OF ION TRANSPORT AND SELECTIVITY IN MEMBRANES WITH ELECTRICALLY CONDUCTIVE SURFACE

Music break

3⁰⁰-3²⁰ Valery Ugrozov (*Financial University under the Government of the Russian Federation, Moscow, Russia*)

MATHEMATICAL SIMULATION OF GAS TRANSPORT THROUGH COMPOSITE MEMBRANES

ORAL PRESENTATIONS

3²⁵-3⁴⁰ Maxim Shalygin, Alina Kozlova, and Vladimir Teplyakov (*A.V.Topchiev Institute of Petrochemical Synthesis, Russian Academy of Sciences, Moscow, Russia*)

MODELING OF ALCOHOLS RECOVERY FROM DILUTED WATER SOLUTIONS WITH MEMBRANE VAPOR SEPARATION

3⁴⁵-4⁰⁰ Irina Falina, Olga Demina, and Victor Zabolotsky (*Kuban State University, Krasnodar, Russia*)

CAPILLARY MODEL OF ELECTROOSMOTIC TRANSFER IN ION-EXCHANGE MEMBRANES

4⁰⁵ Discussion

Friday, December 4

Session 3. 11.00 A.M. – 1.10 P.M. (MOSCOW TIME)

Chairman: Victor Starov

KEYNOTE LECTURE

11⁰⁰-11²⁰ Vasily Kirsch (*A.V. Topchiev Institute of Petrochemical Synthesis, A.N. Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences, Moscow, Russia*)

SIMULATION OF SOLUTE TRANSPORT IN A CROSS-FLOW PAST A ROW OF HOLLOW-FIBER MEMBRANES

ORAL PRESENTATIONS

11²⁵-11⁴⁰ Anna Trybala and Victor Starov (*Loughborough University, Loughborough, UK*)
CURRENT PROBLEMS IN KINETICS OF WETTING AND SPREADING

11⁴⁵-12⁰⁰ Asmat Ullah, Victor Starov (*University of Engineering & Technology Peshawar, Pakistan; Loughborough University, UK*)
OSCILLATORY MEMBRANE MICROFILTRATION FOR THE SEPARATION OF CRUDE OIL DROPS FROM PRODUCED WATER

Music break

12¹⁰-12²⁵ Satya Deo, Deepak Kumar Maurya, and Anatoly Filippov (*University of Allahabad, Prayagraj; Institute of Physical Sciences for Study and Research, V. B. S. Purvanchal University, Jaunpur, India; Gubkin Russian State University of Oil and Gas, Moscow, Russia*)
INFLUENCE OF MAGNETIC FIELD ON HYDRODYNAMIC PERMEABILITY OF BIPOROUS MEMBRANE

12³⁰-12⁴⁵ Amit Kumar Saini, Satyendra Singh Chauhan, and Ashish Tiwari (*Birla Institute of Technology and Science Pilani, Rajasthan, India*)
CREEPING FLOW OF VISCOELASTIC FLUID THROUGH A SWARM OF POROUS CYLINDRICAL PARTICLES: BRINKMAN-FORCHHEIMER MODEL

12⁵⁰-1⁰⁵ Anatoly Filippov, Yulia Koroleva, Amit Verma (*Gubkin Russian State University of Oil and Gas, Moscow, Russia; Indian Institute of Technology Patna, Bihta, Patna, India*)
NUMERICAL STUDY OF STOKES-BRINKMAN SYSTEMS WITH VARYING LIQUID VISCOSITY

Session 4. 2.00-4.30 P.M. (MOSCOW TIME)

Chairman: Maarten Biesheuvel

KEYNOTE LECTURES

2⁰⁰-2²⁰ Isaak Rubinstein, Boris Zaltzman (*Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Sede-Boqer, Israel*)

MECHANISMS OF HYDRODYNAMIC INSTABILITY IN CONCENTRATION POLARIZATION

2²⁵-2⁴⁵ Anna Kovalenko, Matthias Vessling, Victor Nikonenko, Elizaveta Evdochenko, Machamet Urtenov (*Kuban State University, Krasnodar, Russia; Chemical Process Engineering AVT.CVT, RWTH Aachen University, Aachen, Germany*)

THE PHENOMENON OF SPACE CHARGE BREAKDOWN IN ELECTRO-MEMBRANE SYSTEMS

Music break

ORAL PRESENTATIONS

3⁰⁰-3¹⁵ Anna Kovalenko, Machamet Urtenov (*Kuban State University, Krasnodar, Russia*)

ANALYSIS OF THE CURRENT VOLTAGE CURVE OF ELECTROMEMBRANE SYSTEMS

3²⁰-3³⁵ Aminat Uzdenova (*Umar Aliev Karachai-Cherkess State University, Karachaevsk, Russia*)

MATHEMATICAL MODELING OF ELECTROCONVECTION IN FLOW-THROUGH ELECTRODIALYSIS MEMBRANE CELLS: INFLUENCE OF THE INLET BOUNDARY CONDITION FOR THE ION CONCENTRATION

3⁴⁰-3⁵⁵ Semyon Mareev, Victor Nikonenko, and Natalia Pismenskaya (*Kuban State University, Krasnodar, Russia*)

CHRONOPOTENTIOMETRY OF MONOPOLAR ION-EXCHANGE MEMBRANES: MODELING AND EXPERIMENT

4⁰⁰ Discussions

CLOSING CEREMONY