

**ICCMR12 Programme  
Version 18.05.2015**

**Sunday, June 21st, 2015  
(Faculty of Chemical Technology and Engineering, „New Chemistry” building, al. Piastów 42)**

17.00-20.00

Registration & Welcome Reception

**Monday, June 22nd, 2015**

**(Centre for Nanotechnology Research and Education, al. Piastów 45)**

8.30-9.00

**Opening Ceremony**

9.00-10.00

**Plenary Lecture 1  
ANGELO BASILE  
A PANORAMIC VIEW ON INORGANIC MEMBRANE REACTOR TECHNOLOGY IN THE FIELD OF  
HYDROGEN GENERATION**

**(Faculty of Chemical Technology and Engineering, „New Chemistry” building, al. Piastów 42)**

10.00-10.30

***Coffee break*  
Registration**

**Session 1. Catalytic Membrane Reactors for Hydrogen Production**

**Session 2. Catalytic Membrane Reactors for Organic Synthesis Applications 1**

10.30-11.00

**Keynote Lecture 1**  
Toshinori Tsuru  
Hydrogen production from energy carriers by silica-based catalytic membrane reactor

10.30-11.00

**Keynote Lecture 2**  
Weishen Yang  
Conversion of xylose into furfural in a MOF-based mixed matrix membrane reactor

11.00-11.20

**Oral Presentation 1**  
Adolfo Iulianelli  
Hydrogen generation from steam reforming of bio-derived sources via composite palladium-based membrane reactor technology

11.00-11.15

**Oral Presentation 2 (S)**  
Veronica Pinos  
Parallel reactions during the phenol abatement in aqueous medium using catalytic membrane reactors

11.20-11.40	<p><b>Oral Presentation 3</b>  Andreas Goldbach  PdCuAg membrane for hydrogen production from sulphur-contaminated feedstocks</p>	11.15-11.35	<p><b>Oral Presentation 4</b>  Pekka Simell  Toluene decomposition on oxygen permeable perovskite membrane reactors</p>
11.40-12.00	<p><b>Oral Presentation 5</b>  Miguel Madeira  Enhancing the low temperature water-gas shift reaction through a hybrid sorption-enhanced membrane reactor for high-purity hydrogen production</p>	11.35-11.55	<p><b>Oral Presentation 6</b>  Vesna Middelkoop  Development and characterisation of catalytic membrane reactors for oxidative coupling of methane</p>
12.00-12.20	<p><b>Oral Presentation 7</b>  David Alique  Hydrogen production in a pore-plated Pd-membrane reactor: experimental analysis and model validation for the water gas shift reaction</p>	11.55-12.15	<p><b>Oral Presentation 8</b>  Zhentao Wu  A micro-structured ceramic hollow fibre membrane reactor for oxidative coupling of methane (OCM)</p>
12.20-12.35	<p><b>Oral Presentation 9 (S)</b>  Joel Alexandre Moreira Silva  Hydrogen production via glycerol steam reforming with simultaneous H<sub>2</sub> and CO<sub>2</sub> removal - a thermodynamic study</p>	12.15-12.30	<p><b>Oral Presentation 10 (S)</b>  Michael Wales  Composite catalytic tubular membranes for selective hydrogenation in three-phase systems</p>
12.35-12.50	<p><b>Oral Presentation 11 (S)</b>  Solomon A. Wassie  Chemical switching reforming for pure hydrogen production with integrated CO<sub>2</sub> capture: evaluation of vertical membrane insertion</p>	12.30-12.45	<p><b>Oral Presentation 12 (S)</b>  Antonios Vamvakeros  Observing the chemical evolution of a working catalytic membrane reactor</p>
12.45-13.50	<b>Lunch</b>		

<p style="text-align: center;"><b>Workshop „Shape your research project”</b></p> <p style="text-align: center;"><b>13.50 – 16.50</b></p>	<b>Session 3. Membrane Reactors with Conducting Membranes</b>	
	13.50-14.20	<p><b>Keynote Lecture 3</b> Nikolay Sheldeshov</p> <p>Bipolar membranes for electrochemical membrane reactors producing hydrogen and hydroxyl ions</p>
	14.20-14.40	<p><b>Oral Presentation 13</b> Yanying Wei</p> <p>Improved hydrogen separation through mixed proton-electron conducting cermet membrane with good CO<sub>2</sub> stability</p>
	14.40-15.00	<p><b>Oral Presentation 14</b> Xuefeng Zhu</p> <p>Hydrogen separation using mixed ionic-electronic conducting membrane reactors</p>
	15.00-15.20	<p><b>Oral Presentation 15</b> Stanislav Melnikov</p> <p>Modeling of the current-voltage characteristics of the asymmetric bipolar membranes in acid/alkali solutions</p>
	15.20-15.35	<p><b>Oral Presentation 16 (S)</b> Emanuel Forster</p> <p>Thermochemical stability of proton conducting membrane materials and catalysts for water-gas shift reactions</p>
	15.35-15.55	<b>Coffee break</b>

		<b>Session 4. Modelling and Simulation for Process Optimization 1</b>	
		15.55-16.25	<b>Keynote Lecture 4</b> Martin van Sint Annaland A numerical study on the mass transfer in micro fluidized beds with H <sub>2</sub> extraction via membranes
		16.25-16.45	<b>Oral Presentation 17</b> Kamran Ghasemzadeh Modeling of palladium membrane reactor for hydrogen production during methanol steam reforming using computational fluid dynamic (CFD) method
		16.45-17.05	<b>Oral Presentation 18</b> Angelo Basile Modeling of a catalytic membrane reactor for the direct synthesis of dimethyl ether
16.50-17.20	<b>Coffee break</b>	17.05-17.20	<b>Oral Presentation 19 (S)</b> Ramon Voncken Hydrodynamics and mass transfer phenomena in fluidized bed membrane reactors
17.20-19.20	<b>Poster session</b>		

Tuesday, June 23rd, 2015

(Faculty of Chemical Technology and Engineering, „New Chemistry” building, al. Piastów 42)

8.30-9.30	<b>Plenary Lecture 2</b> <b>THEODORE TSOTSIS</b> <b>CHALLENGES AND OPPORTUNITIES FOR THE USE OF INORGANIC MEMBRANES FOR REACTIVE SEPARATION APPLICATIONS</b>		
<b>Session 5. Membranes Design for Process Intensification 1</b>		<b>Session 6. Catalytic Membrane Reactors for Synthesis Applications</b>	
9.30-10.00	<b>Keynote Lecture 5</b> Fausto Gallucci On membrane preparation for high temperature fluidized bed membrane reactors	9.30-10.00	<b>Keynote Lecture 6</b> Adélio Mendes Innovative CO <sub>2</sub> selective membrane reactor for low temperature methanol steam reforming
10.00-10.20	<b>Oral Presentation 20</b> David Alfredo Pacheco Tanaka Preparation and characterization of ultra-thin (< 1µm) palladium-silver membranes	10.00-10.15	<b>Oral Presentation 21 (S)</b> Aleksandra Lytkina Bimetallic carbon nanocatalysts for methanol steam reforming in a conventional and membrane reactors
10.20-10.35	<b>Oral Presentation 22 (S)</b> Ekain Fernandez Metallic supported palladium alloy membranes for high temperature (fluidized bed) applications	10.15-10.30	<b>Oral Presentation 23 (S)</b> Andrej Ilin Catalytic activity of LiZr <sub>2</sub> (PO <sub>4</sub> ) <sub>3</sub> NASICON-type phosphates in ethanol conversion process in conventional and membrane
10.35-10.50	<b>Oral Presentation 24 (S)</b> Jose-Antonio Medrano Development of a novel experimental technique for the study of mass transfer in fluidized bed membrane reactors	10.30-10.50	<b>Oral Presentation 25</b> Roland Dittmeyer Direct catalyzed synthesis of hydrogen peroxide using a novel membrane reactor system
10.50-11.15	<b>Coffee break</b>		

Session 5 – cont.		Session 7. Modelling and Simulation for Process Optimization 2	
11.15-11.30	<b>Oral Presentation 26 (S)</b> Matthew Young In-situ atomic force microscopy study of metal surfaces for catalytic hydrogenation membrane reactors	11.15-11.45	<b>Keynote Lecture 7</b> Alessio Caravella Concentration polarisation distribution along Pd-based membrane reactors: a modelling analysis for water-gas shift
11.30-11.45	<b>Presentation of a company</b> Mateusz Kawecki Anton Paar Poland Sp. z o.o. Investigations on the degree of membranes surface modification and the adsorption phenomenon with application of zeta potential	11.45-12.05	<b>Oral Presentation 27</b> Ekaterina Shelepova Syngas production in the catalytic membrane reactor: theoretical optimization of the process
		12.05-12.25	<b>Oral Presentation 28</b> Ivo Roghair Optimization of membrane reactors for Fischer Tropsch synthesis
Session 8. Membranes Design for Process Intensification 2			
11.45-12.15	<b>Keynote Lecture 8</b> Juergen Caro Oxygen transporting perovskite membranes for novel applications: aromatization of methane and Ostwald reaction	12.25-12.45	<b>Oral Presentation 30</b> Miguel Madeira A new model accounting for the poisoning effects of co and CO <sub>2</sub> in the H <sub>2</sub> -permeability using a Pd-based membrane
12.15-12.35	<b>Oral Presentation 29</b> Heqing Jiang Oxygen permeability and stability of ceria-based membranes under reaction conditions	12.45-13.00	<b>Oral Presentation 32 (S)</b> Arash Helmi On the concentration polarization in packed bed and fluidized bed membrane reactors
12.35-12.55	<b>Oral Presentation 31</b> Stefan Baumann Development of dual phase mixed oxygen ionic electronic conducting membranes for the use in methane conversion	13.00-13.20	<b>Oral Presentation 34</b> Olga Nekhamkina Concentration-polarization in Pd-membrane separators. Fast numerical analysis
12.55-13.10	<b>Oral Presentation 33 (S)</b> Jian Xue A-site deficient and CO <sub>2</sub> -tolerant		

	(Pr <sub>0.9</sub> La <sub>0.1</sub> ) <sub>2</sub> (Ni <sub>0.74</sub> Cu <sub>0.21</sub> Ga <sub>0.05</sub> )O <sub>4+□</sub> membrane with high oxygen permeability		
13.10-14.20	<b>Lunch</b>		
14.30-17.00	<b>Session on European Projects related to the conference topics</b>		
	14.30-14.55 14.55-15.20 15.20-15.45 15.45-16.10 16.10-16.35 16.35-17.00	CARENA (Arend de Groot) REFORCELL (Leonardo Roses) GREEN-CC (Stefan Baumann) DEMCAMER (Jose Luis Viviente) COMETHY (Alberto Giaconia) BeingENERGY (Adelio Mendes)	
17.30-20.00	<b>Social programme</b>  <b>Dinner with bonfire (“Stara Rzeźnia” restaurant)</b>		

Wednesday, June 24th, 2015

(Faculty of Chemical Technology and Engineering, „New Chemistry” building, al. Piastów 42)

8.30-9.30

**Plenary Lecture 3**

**DARREN D. SUN**

**MULTIFUNCTIONAL NANOFIBER MEMBRANE MADE BY 3D PRINTING PROCESS FOR CLEAN WATER AND ENERGY PRODUCTION**

**Session 9. Photocatalytic Membrane Reactors**

**Session 10. Catalytic Membrane Reactors for Organic Synthesis Applications 2**

9.30-10.00

**Keynote Lecture 9**

Raffaele Molinari

Photocatalytic membrane reactors for degradation of organic pollutants and synthesis of organics

9.30-10.00

**Keynote Lecture 10**

Sergio Rojas

Catalytic membrane reactors for the production of biofuels

10.00-10.20

**Oral Presentation 35**

Adele Brunetti

Photocatalytic membranes based on TiO<sub>2</sub> catalysts and fluorinated polymers for CO<sub>2</sub> conversion

10.00-10.20

**Oral Presentation 36**

Esperanza Ruiz

Electrochemical synthesis of fuels by CO<sub>2</sub> hydrogenation over Fe in a bench scale solid electrolyte membrane reactor

10.20-10.35

**Oral Presentation 37 (S)**

Thi-Huyen-Trang Trinh

Performance of submerged ceramic membrane in photocatalytic membrane reactor (PMR)

10.20-10.35

**Oral Presentation 38 (S)**

John Stanford

Three-phase hydrogenation of biomass derived intermediates using a polymeric membrane reactor

10.35-11.10

**Coffee break**

**Oral Presentation 39 (S)**

Ali Hedayati

Experimental and exergetic evaluation of bio-ethanol catalytic steam reforming in a membrane reactor



## Session 11. Membrane Reactors for Methane Steam Reforming and Water Gas Shift

11.10-11.40	<b>Keynote Lecture 11</b> Thijs Peters Membrane micro-reactors for methane steam reforming processes
11.40-12.00	<b>Oral Presentation 40</b> Giuseppe Barbieri High temperature water gas shift in innovative packed bed membrane reactor
12.00-12.20	<b>Oral Presentation 41</b> Alexander Livshits Methane steam reforming in the stepwise MR with the composite membranes based on V
12.20-12.40	<b>Oral Presentation 42</b> Désirée Van Holt High-temperature membrane catalyst systems for a CO-shift membrane reactor
12.40-13.00	<b>Oral Presentation 43</b> Adele Brunetti Integrated membrane system for hydrogen production
12.30-14.00	<b>Lunch</b>
14.00-	<b>Social programme:</b> 14.00 – 18.00 Sightseeing 18.00-19.00 Free time 19.00-... Conference dinner (“Zamkowa” restaurant)

Thursday, June 25th, 2015

(Faculty of Chemical Technology and Engineering, „New Chemistry” building, al. Piastów 42)

8.30-9.30	<b>Plenary Lecture 4</b> <b>JÖRG VIENKEN</b> <b>MEMBRANES FOR THE APPLICATION IN ARTIFICIAL ORGANS: NEEDS, PITFALLS AND NEW DEVELOPMENTS</b>		
<b>Session 12. Membrane Bioreactors in Wastewater Treatment and Biotechnology 1</b>		<b>Session 13. Artificial Organs and Tissue Engineering</b>	
9.30-10.00	<b>Keynote Lecture 12</b> Jose Sanchez-Marcano Modelling and simulation of a multichannel enzymatic membrane reactor	9.30-10.00	<b>Keynote Lecture 13</b> Loredana de Bartolo Membrane bioartificial systems in tissue engineering and regenerative medicine
10.00-10.15	<b>Oral Presentation 44 (S)</b> Fauziah Marpani Biocatalytic alginate membrane by enhanced concentration polarization	10.00-10.20	<b>Oral Presentation 45</b> Efrem Curcio In vitro oxygen uptake kinetics of human cells for tissue engineered airway
10.15-10.35	<b>Oral Presentation 46</b> Anna Trusek-Holownia Catalytic enzymatic membranes: efficient utilization in pressure driven membrane processes	<b>Session 14. Electrochemical Devices and Transport Applications of Membrane Reactors</b>	
10.35-10.55	<b>Oral Presentation 47</b> Gilbert Rios Enzymatic membrane solutions for CO <sub>2</sub> capture – a review	10.20-10.50	<b>Keynote Lecture 14</b> Andrey Yaroslavtsev Electrocatalytic and transport properties of hybrid Nafion membranes doped by silica and cesium acid salt of phosphotungstic acid in hydrogen fuel cells
		10.50-11.05	<b>Oral Presentation 48 (S)</b> Wei Fang CO <sub>2</sub> reforming of methane to synthesis gas in a CO <sub>2</sub> -tolerant dual-phase oxygen-transporting membrane reactor

10.55-11.25	<b>Coffee break</b>		
<b>Session 15. Membrane Bioreactors in Wastewater Treatment and Biotechnology 2</b>		<b>Session 14 – cont.</b>	
11.25-11.55	<p style="text-align: center;"><b>Keynote Lecture 15</b> Lidietta Giorno</p> <p>Biocatalytic membrane reactors: state-of-the-art and perspectives in biotechnology and waste water treatment</p>	11.25-11.40	<p style="text-align: center;"><b>Oral Presentation 49 (S)</b> Viola Sim</p> <p>The effects of confinement in self-humidifying PFSA-zeolite proton exchange membrane</p>
11.55-12.15	<p style="text-align: center;"><b>Oral Presentation 50</b> Abaynesh Yihdego Gebreyohannes</p> <p>Biocatalyst recovery and anti-fouling properties of biofunctionalized magnetic nanoparticles in membrane bioreactor</p>	11.40-11.55	<p style="text-align: center;"><b>Oral Presentation 51 (S)</b> Ran Deng</p> <p>Investigating the state of water in confined Nafion membrane</p>
12.15-12.35	<p style="text-align: center;"><b>Oral Presentation 52</b> Maria Tomaszewska</p> <p>Ethanol production from whey using bioreactor coupled with direct contact membrane distillation</p>	11.55-12.15	<p style="text-align: center;"><b>Oral Presentation 53</b> Seng Kian Cheah</p> <p>The influence of catalyst deposition onto dense membranes on catalytic properties</p>
12.35-12.55	<p style="text-align: center;"><b>Oral Presentation 54</b> Sibdas Bandyopadhyay</p> <p>MBR using low cost ceramic membranes in tubular, capillary and multichannel configuration</p>	12.15-12.35	<p style="text-align: center;"><b>Oral Presentation 55</b> Simona Ovtar</p> <p>Magnesium oxide supported thin dual phase composite oxygen permeation reactors</p>
12.35-14.00	<b>Lunch</b>		
14.00-14.40	<b>Concluding Remarks: Closing Speech and Awards Ceremony</b>		

## POSTERS

No.	Presenting author	Title
1	Naoki Takagiwa	Selective oxidation of ethylene using catalytic palladium membrane
2	Giuseppe Bagnato	Hydrogen generation from model bio-ethanol generation steam reforming in a supported palladium-based membrane reactor
3	Anna Perdikaki	Catalytic nanoporous membrane reactor for CO oxidation
4	Chang-Hyun Kim	Improvement in perm-selectivity and long-term durability of palladium alloy hydrogen separation membranes
5	Takafumi Nakayama	Kinetic enhancement of low temperature ammonia decomposition in palladium membrane reactor
6	Angelo Basile	Performance evaluation of palladium membrane reactor for hydrodealkylation of toluene using CFD method
7	Antonio Comite	High temperature performance of a palladium membrane supported on a porous stainless steel support modified with an alumina barrier layer
8	Antonio Comite	Synthesis of hydrotalcite membranes for carbon dioxide separation
9	Ran Deng	Continuous flow ZIF-8 membrane capillary microreactor for efficient Knoevenagel condensation reaction
10	Tatiana Anokhina	Hydrodechlorination of chlororganic compounds from water by the Pd-loaded interfacial catalytic membrane contactor/reactor
11	Naotsugu Itoh	Vapor phase esterification using a CHA type of zeolite membrane
12	Weishen Yang	Enhancement of transesterification reactions using methanol-selective FAU-type zeolite membranes
13	Fabiana Medeiro Do Nascimento	Synthesis and characterization of zeolite membrane MOR dip coating method

	Silva	
14	Fabiana Medeiro Do Nascimento Silva	Synthesis and characterization of zeolite membrane composite MFI/MCM-41
15	Kamran Ghasemzadeh	High performance silica membrane reactor for hydrogen production during methanol steam reforming
16	Stanislav Melnikov	Application of functionalized hyperbranched polymers as catalysts of water dissociation reaction in asymmetric bipolar membranes
17	Frans Van Berkel	Long term testing of palladium membranes under steam reforming conditions
18	Martin Cholewa	Microstructured membrane reactor for the dehydrogenation of methylcyclohexane
19	Alexander Livshits	Optimization of group 5 metal alloys as a material for hydrogen separation membranes
20	Viola Sim	Positioning of zeolitic imidazolate framework membrane in microchannel
21	Jon Meléndez	Preparation and characterization of ultra-thin (< 1 $\mu$ m) Pd-Ag membranes on porous alumina support (100 nm pore size)
22	Edyta Makuch	The studies on the limonene epoxidation over the microporous TS-1 catalyst
23	Edyta Makuch	The regeneration of the TS-1 catalyst after the epoxidation process
24	Rufino M. Navarro	Advanced Pt-Re/CeO <sub>2</sub> -TiO <sub>2</sub> WGS catalyst for membrane reactor applications
25	Kornelia Malarczyk	Effect of reaction time on the course of epoxidation of canola oil
26	Kornelia Malarczyk	Effect of catalyst loading on the course of epoxidation of canola oil

27	Liang-Xin Ding	A CO <sub>2</sub> -stable hollow-fiber membrane with high hydrogen permeation flux
28	Alba Arratibel	N <sub>2</sub> , He and CO <sub>2</sub> diffusion mechanism through nanoporous YSZ/ $\gamma$ -Al <sub>2</sub> O <sub>3</sub> layers and their use in a pore-filled membranes for membrane reactors
29	Shin-Kun Ryi	Development of electroless plating bath for planner type Pd based composite membrane
30	Shin-Kun Ryi	Development of a new porous support metal based on nickel and its application for Pd based composite membranes
31	Shuang-Feng Yin	Visible-light-excited bismuth-containing photocatalysts with heterojunctions: Synthesis and application in wastewater treatment
32	Beata Michalkiewicz	Fe/EuroPh catalysts for limonene oxidation to 1,2-epoxylimonene, its diol, carveol, carvone and perillyl alcohol
33	Andreas Goldbach	Supported PdAg membranes - Systematic correlations and application limitations
34	Hongwei Sun	Cobalt-free oxygen permeable membrane for utilization on partial oxidation of methane
35	Beata Michalkiewicz	Production of hydrogen and carbon nanomaterials from methane using Co/ZSM-5 catalyst
36	Hannes Richter	High temperature water separation with nanoporous inorganic membranes
37	Joanna Łojewska	VOC combustion effect of grain size of cobalt spinel catalyst deposited by low temperature plasma on metallic structured supports
38	Joanna Łojewska	Kinetic approach to evaluation of activity and mass transport in reactors in structured catalysts for VOC combustion
39	Przemysław Jodłowski	2D in situ correlation spectroscopic study of catalytic combustion of VOC`s over plasma deposited cobalt oxide structured catalyst
40	Przemysław Jodłowski	Cu SSZ-13 zeolite catalyst on metallic foam support for SCR of NO <sub>x</sub> with ammonia: catalyst layering and characterisation of active sites
41	Katja Haas-Santo	Modeling of light gas permeation through amorphous silica microporous membranes

42	Katja Haas-Santo	A crystal microbalance device for investigation of gas adsorption in zeolite ZSM-5 at high temperatures for the modeling of membrane catalysis
43	Ekaterina Shelepova	Impact of hydrocarbon's nature on the efficiency of dehydrogenation processes in catalytic membrane reactor
44	Gioele Di Marcoberardino	Definition of validated membrane reactor model for 5 kW power output CHP system under different natural gas composition
45	Daniela Szaniawska	Multi-stage filtration integrated ultrafiltration for industrial brine treatment and fish protein recovery
46	Magdalena Janus	Photocatalysis and membrane processes for laundry wastewater treatment
47	Edyta Kudlek	Degradation of micropollutants and change of toxic effect of water during photolysis and photocatalysis
48	Mariola Rajca	The effectiveness of removal of NOM from natural water using photocatalytic membrane reactors in PhR-UF and PhR-MF modes
49	Dominika Darowna	Stability of the PVDF membranes in photocatalytic membrane reactors
50	Kacper Szymański	Humic acids removal in a photocatalytic membrane reactor with a ceramic UF membrane
51	Sylwia Mozia	On the fouling and stability of polymeric and ceramic membranes in photocatalytic membrane reactors
52	François-Marie Allieux	Catalytic electro-membrane reactor for the continuous production and purification of biodiesels
53	Agata Markowska-Szczupak	Application of nanofiltration for production of 1,3-propanediol in membrane bioreactor
54	Brygida Wojtyniak (Kwasna)	Separation of lactic acid from fermentation broth using ultrafiltration process integrated with bioreactor
55	Marta Waszak	The ultrafiltration ceramic membrane used for bacterial separation in membrane bioreactor

56	Anna Trusek-Holownia	Protein enzymatic hydrolysis integrated with nanofiltration: influence of substrate retention on process efficiency
57	Vincenzo Piemonte	Transport regimes in microfluidic bioreactors: hepatocyte culture as a case study
58	Jacek Grams	Activity and characterization of nickel catalyst supported on ceria-zirconia used in cellulose conversion process
59	Jacek Grams	Thermo-chemical conversion of cellulose towards hydrogen rich gas using modified mesoporous nickel catalyst
60	Agnieszka Ruppert	Bimetallic catalysts for formic acid decomposition towards hydrogen
61	Agnieszka Ruppert	Activity and stability of ruthenium supported catalysts in hydrolytic hydrogenation of biomass towards biofuel additives